

American Gas *Association* MONTHLY

War Finds Gas Industry Alert

Gas Appliance Outlook in '42

Make Food Dollars Buy Health

F.H.A. Housing Helps Defense

Pipe Line Temperature Survey

January



1942

VOLUME XXIV NUMBER 1


**American Gas
Association
MONTHLY**

CONTENTS FOR JANUARY 1942



When war came to America, the gas industry was not caught napping but was well on the way to full mobilization of its resources. More than two years before the shooting started, a national committee had been set up to take steps which would prepare the industry for any eventuality. Questionnaires were sent out, material from abroad was gathered, meetings were held and various methods of protecting life and property were discussed. In short, the industry's foresighted action provided machinery and information which were instantly available when the time came. . . . One of the first acts necessary after the declaration of war was to call an industry-wide meeting to prepare recommendations for air raid protection. These were subsequently adopted by the Office of Civilian Defense and are reported in this issue. . . . The gas industry set many all-time records in 1941 and finished the year in splendid condition. Particularly noteworthy were the gains attributed to the war effort and the sharp increase in total customers served, showing the continued popularity of gas fuel. . . . Other timely articles in this issue cover defense advertising, building developments, and other features. . . . Happy New Year!

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SUBSCRIPTION · \$3.00 A YEAR

Published eleven times a year by the American Gas Association, Inc. Publication Office, American Building, Brattleboro, Vt. Publication is monthly except July and August which will be a bi-monthly issue. Editorial Offices, 420 Lexington Avenue, New York, N. Y. Address all communications to American Building, Brattleboro, Vermont, or to 420 Lexington Ave., New York, N. Y. All manuscript copy for publication should be sent to the editorial offices in

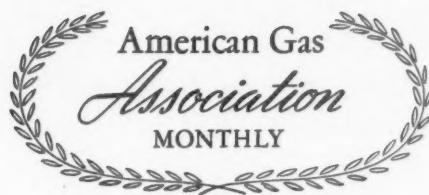


New York. The Association does not hold itself responsible for statements and opinions contained in papers and discussions appearing herein. Entered as Second Class Matter at the Post Office at Brattleboro, Vermont, February 10th, 1922, under the Act of March 3, 1879.

Cable Addresses: American Gas Association
AMERIGAS, NEW YORK
American Gas Association Testing Laboratories
AMERGASLAB, CLEVELAND



Lone Star Gas Company's pipe line suspension bridge over the Brazos River, Waco, Texas. H. T. Pollard, foreman of the maintenance crew that recently painted the bridge, is shown on the pipe. This picture by Bruce Cunningham is the January winner in the contest for A. G. A. MONTHLY frontispiece illustrations.



JAMES M. BEALL, *Editor*

1941 HIGHLIGHTS

.... War Finds Gas Industry Prepared for Test

WAR finds the gas industry prepared and on the alert. Gas fuel is one of the nation's prime energy resources; it constitutes a vital component of the nation's fuel supply. In today's all-out program to speed the production of war materials, it is inevitable that gas fuel will be utilized to the utmost limits of its potentialities, especially in highly industrialized areas. Plans to meet that responsibility are well advanced.

Two years before the shooting began in Europe the gas industry started to prepare itself against a state of war here. Valuable data obtained from abroad, prior to and after hostilities developed, covering protection of plants, transmission lines and other facilities from air raids and other enemy action, including sabotage, have been distributed throughout the industry. Having thus anticipated the coming of war, the gas industry is well prepared to meet the tests that are sure to come.

In several noteworthy respects, operations of the gas industry in 1941 set up new records. Customers served reached a new high and so did sales and revenues of the combined manufactured and natural gas industries. The public's unprecedented demand for the latest fuel and vitamin-saving types of gas ranges, including the popular certified performance models, also surpassed all previous sales records.

At the year end, 18,618,000 customers, representing the largest number ever connected to the mains of the industry, were served by manufactured and natural gas companies. This was an increase of 627,000 over the year 1940. As between the two branches of the industry, manufactured gas companies now serve 10,430,000 customers and the remaining 8,188,000 are served by natural gas companies. Total population reached by the industry is now approximately 85,000,000.

Revenues of the entire industry, both manufactured and

By GEORGE S. HAWLEY
President, American Gas Association

natural, aggregated \$909,441,000, the largest ever recorded, a gain of 4.3 per cent over 1940. Natural gas companies grossed \$522,053,000, a gain of 6.0% for the year and a new record, while revenues of manufactured gas companies were \$387,388,000, as compared with \$379,023,000 in 1940, an increase of 2.2 per cent.

Sales of natural gas for industrial purposes rose from 716,668,000,000 cubic feet in 1940 to 851,635,000,000 cubic feet in 1941, an increase of 18.8 per cent. This is an all-time record increase for this class of consumption.

Sales of manufactured gas for industrial purposes rose from 61,768,000,000 cubic feet in 1940 to 79,466,000,000 cubic feet in 1941, an increase of 28.7 per cent. This establishes another record-breaking increase.

Total gas sales reached a new peak of more than two trillion cubic feet.

In the household use of gas, such as cooking, refrigeration, househeating, water heating, etc., manufactured gas companies sold 264,893,000,000 cubic feet, a decrease of 0.9 per cent for the year. Gas consumed for house heating registered a decrease of 2.8 per cent. Sales of natural gas for domestic uses, including house heating, also registered a slight decrease, falling from 419,532,000,000 cubic feet in 1940 to 417,216,000,000 cubic feet in 1941, a loss of 0.6 per cent.

Preliminary estimates indicate that the total production of natural gas in 1941, including amounts used in the manufacture of carbon black and for field purposes, will reach a total of approximately three trillion cubic feet. Approximately 204 billion cubic feet of natural gas were used as fuel for generating electric power in 1941, an increase of 21 billion cubic feet over the previous year.

The outstanding development of the year was the phenomenal increase in sales of gas ranges. Total number sold during 1941 was 2,400,000 units—the highest record in the history of the industry, according to the Association of Gas

MANUFACTURED GAS INDUSTRY*

CUSTOMERS	1941		Per Cent Change
	1941	1940	
Domestic	9,608,000	9,405,000	+ 2.2
House Heating	361,000	305,000	+ 18.4
Commercial	418,000	413,000	+ 1.2
Industrial	33,000	35,000	- 5.7
Miscellaneous	10,000	9,000	-
Total	10,430,000	10,167,000	+ 2.6
GAS SALES (MCF)			
Domestic	198,287,000	198,752,000	- 0.2
House Heating	66,606,000	68,498,000	- 2.8
Commercial	57,947,000	58,356,000	- 0.7
Industrial	79,466,000	61,768,000	+ 28.7
Miscellaneous	2,621,000	2,260,000	-
Total	404,927,000	389,634,000	+ 3.9
REVENUE (Dollars)			
Domestic	\$259,168,000	\$258,153,000	+ 0.4
House Heating	43,259,000	43,247,000	0.0
Commercial	49,640,000	48,568,000	+ 2.2
Industrial	33,733,000	27,653,000	+ 22.0
Miscellaneous	1,588,000	1,402,000	-
Total	\$387,388,000	\$379,023,000	+ 2.2

* Preliminary estimates by A. G. A. Statistical Department.

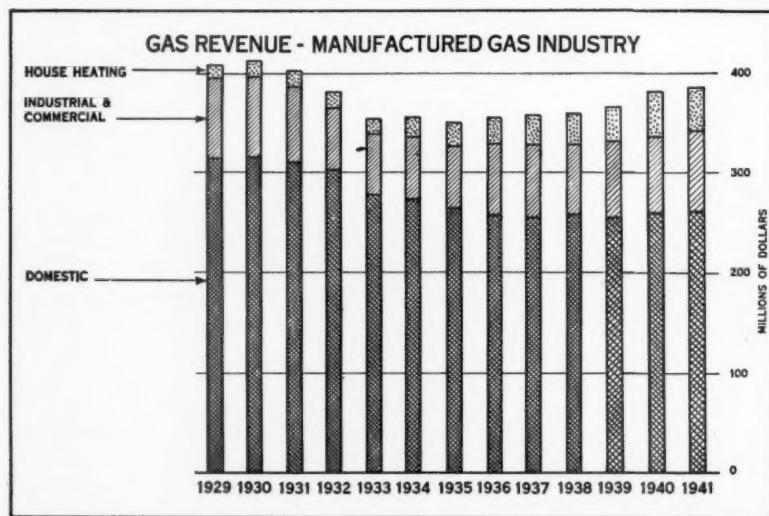
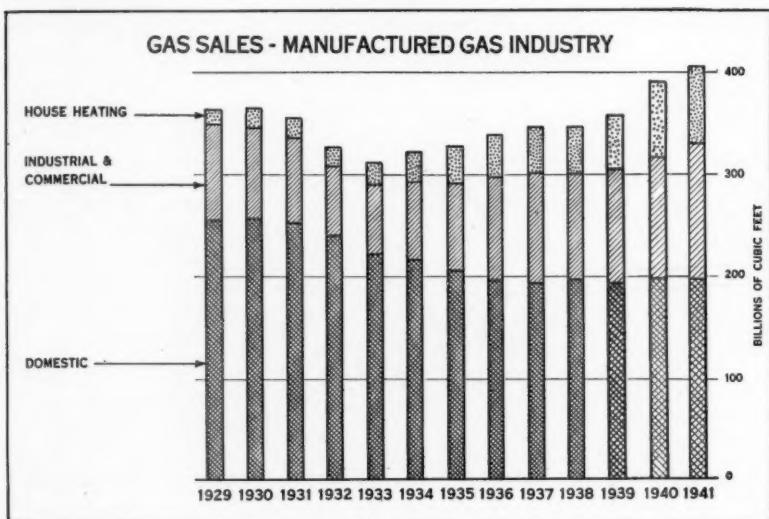
Appliance and Equipment Manufacturers. Actual sales increase over 1940 was 657,500 units, or 38%. The sale of certified performance gas ranges inaugurated in August, 1938, has continued to increase to the point where this type of range, tested and approved for unexcelled cooking performance, represents an increasingly substantial portion of total range sales. Some 750,000 automatic gas water heaters were sold during 1941. Furnace, boiler, and conversion burner sales showed an increase of more than 50%. Gas refrigerator sales hit a new high in many localities prior to production restrictions on all automatic refrigerators.

Coordination for Defense

Organization of the natural gas and natural gasoline industries for defense under the Office of Petroleum Coordinator was effected during the latter part of the year. The natural gas industry has now coordinated all of its defense activities with respect to production and transportation, and the processing and manufacture of derivatives of natural gas, including natural gasoline, liquefied petroleum gas, carbon black and re-cycling operations and their transportation. The appointment of Thomas R. Weymouth, one of the nation's outstanding authorities in his field, as consultant on natural gas has been announced by the Office of Petroleum Coordinator.

Plans are now under way looking toward bringing natural gas to the highly industrialized Appalachian region from the productive fields of Louisiana, Texas and Kansas, in order to supplement present supply. Natural gas companies situated in the Appalachian area are playing a major role in requirements for fuel under the war program. An 800-mile pipeline from the Monroe field in Louisiana to West Virginia is being planned to make additional quantities of natural gas available to Cleveland and vicinity.

In the nation's all-out defense effort, gas fuel has stepped forth in factories, plants and shops as the antithesis of bottlenecks and all the term implies. Today the gas industry is playing a far more extensive and vital role than was possible in the last war. New large-scale heating processes and methods have been evolved and developed



which when applied to the instruments of modern warfare, make certain the superlative equipment demanded by the Army, Navy and Air Corps.

The modern tank—a mobile fortress—affords a good illustration. Gas is used for some fifteen different heating operations in hardening the all-important armor plate which must be hard enough on its outer surface to offset artillery fire and sufficiently tough and resilient on its inner surface to prevent shattering. To approach this quality of product in the last war would have required a heating cycle of from 400 to 600 hours in length. Today, a far superior result can be accomplished in about 100 hours, thanks to extensive technical research.

In today's modern American shipyards will be found gas-operated furnaces varying in size from an ordinary shoe-box for soldering and rivet heating, up to the size of a 5-room house for the annealing of a complete gun turret 50 feet in diameter, weighing 40 tons, and operating at 1,200 degree temperature. This operation extends over a period of hours and uses more than one million cubic feet of gas for each anneal. Furnaces of this type are the largest in the world, and when not in use for annealing, they are equipped with gas-fired unit heaters and used as a shop.

Industrial Use at Peak

Shipments of gas-using equipment for industrial use are at a peak. Firms producing this apparatus are expanding and rapidly going on a 24-hour operating schedule.

From giant open hearth and reheat furnaces in the nation's great steel mills to the tiny torches used in making delicate instruments for bombers, industrial gas equipment is setting a pace that is speedily helping to produce munitions of every character. The demands of the hour—speed of production without compromise of quality—are being met successfully wherever industrial heating operations utilize gas fuel.

A few of the thousands of ways in which gas fuel is used to implement and accelerate the war effort are:

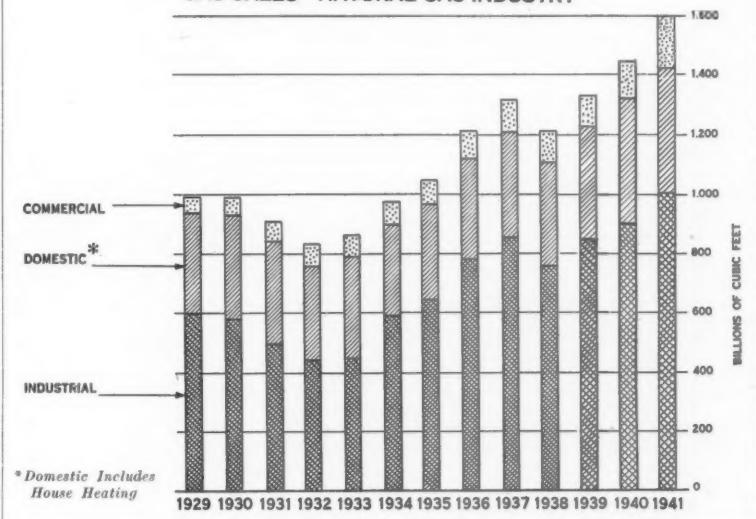
The hardening and drawing of projectiles and gun barrels, annealing cartridge cases, stress-relieving gun tur-

NATURAL GAS INDUSTRY*

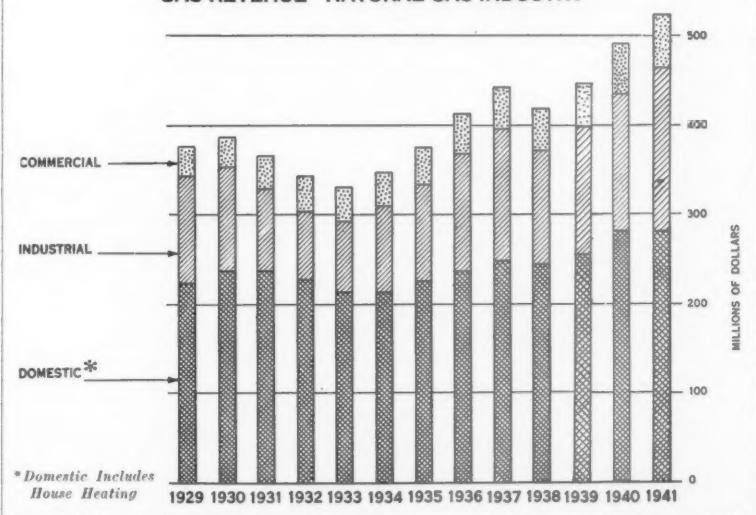
	1941	1940	Per Cent Change
CUSTOMERS			
Domestic (Incl. House Heating)	7,565,000	7,212,000	+ 4.9
Commercial	574,000	565,000	+ 1.6
Industrial	49,000	47,000	+ 4.3
Total	8,188,000	7,824,000	+ 4.7
GAS SALES (MCF)			
Domestic (Incl. House Heating)	417,216,000	419,532,000	- 0.6
Commercial	127,975,000	122,544,000	+ 4.4
Industrial	851,635,000	716,668,000	+18.8
Electric Generation	203,510,000	182,948,000	+11.2
Total Ind. & Elec. Generation	1,055,145,000	899,616,000	+17.3
Total	1,600,336,000	1,441,692,000	+11.0
REVENUE (Dollars)			
Domestic (Incl. House Heating)	\$280,971,000	\$283,017,000	- 0.7
Commercial	57,083,000	55,923,000	+ 2.1
Industrial & Elec. Generation	183,999,000	153,777,000	+19.7
Total	\$522,053,000	\$492,717,000	+ 6.0

* Preliminary estimates by A. G. A. Statistical Department.

GAS SALES - NATURAL GAS INDUSTRY



GAS REVENUE - NATURAL GAS INDUSTRY



AMERICAN GAS ASSOCIATION
420 Lexington Ave.,
New York, N. Y.

December 10, 1941.

Honorable Franklin D. Roosevelt,
The White House,
Washington, D. C.

Dear Mr. President:

The Executive Board of the American Gas Association, meeting December 10, 1941, reaffirms its pledges for full cooperation of the gas utility industry of America with our Government in the national crisis.

Together with Federal agencies, we have long since distributed information for the protection of our plants, wells, transmission lines, and other facilities. Measures have been adopted for the protection of civilian life and for the assurance of a vital fuel service to the homes and industries of America.

We are carrying out plans of close cooperation in the program of nutrition in the national defense.

We are equally ready to join in all necessary protection to the public resulting from air raids and other enemy action, including sabotage, in preparation for which we have issued information based on procedure in other countries at war.

Very truly yours,
(signed) GEORGE S. HAWLEY
President

THE WHITE HOUSE
Washington

December 17, 1941

My dear Mr. Hawley:

The President wishes me to thank you for your letter reaffirming the pledge of cooperation and extending a wholehearted offer of service on behalf of the Executive Board of the American Gas Association. This assurance, together with the voluntary responses from practically every large organization and group in the country, gives concrete evidence of a determination to spare no effort and a readiness to assume any sacrifice necessary to a successful outcome in this crisis.

Very sincerely yours,
M. H. MCINTYRE
Secretary to the President

George S. Hawley, Esq., President
American Gas Association
420 Lexington Avenue
New York, New York

rets, forging aluminum airplane propellers, carburizing engine parts, melting glass for the manufacture of optical range finders, heat-treating horseshoe nails for the cavalry, manufacture of textiles for the armed forces and the making of silk cloth for parachutes.

In army camps, projects and commercial establishments serving soldiers and defense workers, gas is used in rapidly increasing amounts for cooking, water heating, space heating and sterilizing. Restaurants, hotels, clubs and bakeries continue to install new streamlined gas equipment. Appliances for specialized cooking are coming to the fore, supplementing the gas range with deep fat fryers, individual deck baking and roasting ovens, coffee makers, toasters, radiant ceramic broilers and many others.

Appliance Testing Program

Public acceptance of tested and approved gas ranges, water heaters and other equipment has become so extensive that today more than 95% of all gas appliances sold in the United States and Canada display the approval seal of the American Gas Association's testing laboratories. More than 200 municipalities now have ordinances permitting only approved gas equipment to be installed within their limits.

Records of the Bureau of the Census show that since the establishment of the laboratories 16 years ago, accidental deaths resulting from gas poisoning have decreased 50%. Moreover, during the same period, operating efficiency of household gas appliances has increased from 25% to 50%.

Greatly increased demands for approved equipment for newly constructed army camps, defense housing and other projects were major influences in expanding testing operations during the year.

Strong acceptance of gas fuel and modern gas appliances continues in slum clearance projects and national defense housing. Out of 355 completed slum clearing projects, 311 use 111,211 gas ranges for cooking. More than 50,008 gas ranges are also installed in 163 of 193 completed defense housing projects. Eighty-seven thousand dwelling units of both classes of projects use gas for water heating

(Continued on page 37)

Appliance Outlook . . . War Brings Unprecedented Problems to Manufacturers



Watson E. Derwent

ANY attempt to prophesy what the gas industry will be called upon to face during the serious days ahead, or what the general outlook will be one, two or three years hence, would be foolhardy indeed. Conditions existent during the last war cannot be accepted as a precedent for what to expect today. The "business as usual" attitude of 1917 will no doubt undergo many changes now that there is a possibility of war being waged literally on our own doorstep.

Business is faced with a grave problem: the problem of war economy. But it is already rapidly adjusting itself to the situation by planning its activities and programs with an elasticity that will permit a ready adaptation to any change which an emergency might necessitate. However, being realistic, the gas industry recognizes that there is bound to be another armistice, and will make every effort to keep the story of quality appliances and the superiority of gas fuel fresh in the minds of today's consumer. They realize that many of today's consumers will be tomorrow's customers, and should be treated as such, and not neglected during the present crisis.

Seller's Market a Myth

Within the past few months, due to circumstances with which most merchandisers are familiar, there has been a sharp decline in lush, easily acquired consumer business. The generally anticipated seller's market in the major appliance field, anticipated because of restricted production and distribution, has failed to materialize. Figures prove that a substantial part

By WATSON E. DERWENT
President, Association of Gas
Appliance and Equipment
Manufacturers

of the present consumer buying is confined to the field of soft goods and small appliances, and that a great majority of gas range dealers are having no difficulty in meeting the present demand for gas ranges.

This unexpected market situation has convinced the gas industry that there is still a need for active selling programs and aggressive merchandising; that the consumer must continue to be sold on the wisdom of long-range buying through an increased appreciation of quality merchandise.

Defense Needs First

However, the gas industry is not for a moment losing sight of the first importance of national defense, and all plans and activities are being predicated upon this great and urgent need. A recently published brochure of the Association of Gas Appliance and Equipment Manufacturers, outlining the Association's plans for 1942, crystallizes the industry's thinking in this respect, with the following statement:

Realizing that today American industry faces drastic and radical changes in business trends, the CP gas range manufacturers are determined to utilize every means and resource at their command to continue CP production in undiminished quantity. To do this, insofar as it is consistent with our policy of full cooperation in our country's gigantic defense effort, is our pledge to both the government and the gas industry.

Complete 1942 Program Planned

It is the CP range manufacturers' intention to have a well-planned approach to the problem of merchandising, with sales and merchandising helps for the dealer, utility company and floor salesmen as outlined in the Association's recently distributed brochure

entitled, "A Challenge to You, With an Eye to the Future." Tentative plans include two new and forceful Spring-Fall merchandising and promotional programs which will point the way to new and greater gas range opportunities. These programs will be fashioned with up-to-the-minute and timely suggestions and ideas to help meet today's unusual merchandising problems.

In 1942 it will again be the CP manufacturer's policy to aid dealer-merchant allies in sales promotion planning, by providing stimulating suggestions and ideas designed to increase CP gas range sales through increased consumer appreciation and demand.

A new departure for 1942 will be the introduction of four new, novel, complete retail CP gas range promotion programs. Tried and proven, these campaigns have been developed to be applicable to individual sales and merchandising problems. They have been planned for use in any community and will be presented personally by one of the CP national sales counsellors. The 1942 program also calls for uninterrupted continuation of the widely acclaimed services of these CP national sales counsellors. The remarkable success of this field staff has resulted in numerous repeat requests for their services.

In preparation for 1942 is a new salesman's CP Pocket Manual that speaks the salesman's language, telling the CP story graphically and dramatically, in a new and fascinating manner. In order to further focus the salesman's efforts on CP sales, the CP gas range manufacturers also announce a new CP Ranger Club Contest during 1942.

Faith in America

Again let me repeat that all 1942 plans must be predicated upon the nation's immediate needs. American

industry recognizes that the prosecution of this war to a complete and permanent victory must come first, and the gas industry is prepared to make every sacrifice necessary to perpetuate our way of life. The American standard of living is the highest of any country in the world and is the envy of all. Faith in the institutions that have made this standard possible is a patriotic duty and the first requirement of American industry.

The gas industry's faith in that ideal has recently been exemplified by their determination to carry on in the crusade of strengthening the ramparts of one of America's greatest defenses, the nation's health. To guard the family's health through the proper preparation and cooking of food, means to build

the nation's strength, and the gas industry is concentrating on an educational program to teach the American homemaker the proper methods for deriving the most benefit from the food she cooks, and at the same time, how to conserve food.

It is impossible to predict business conditions for even a few months ahead. We do not know what the future holds. But we *do* know that it is the right of America to think and to believe that the essential freedom for which many wars have been fought will endure in civilized society, and that faith in the interests of America, faith in the people of this country, and faith in the nation's business enterprise, will eventually reap the reward of order, permanence and security.

O.C.D. Adopts A.G.A. Recommendations for Air Raid Protection

IMMEDIATELY following America's entry into the war, the question of safety of civilians during air raids assumed paramount importance. To meet this problem as related to the gas industry's domestic users, George S. Hawley, president of the American Gas Association, called a Gas Industry Conference in New York, December 15. At this meeting the Association carefully deliberated from the viewpoint of public safety the best procedure for gas consumers to follow in case of air raid warnings.

A representative committee consisting of Walter C. Beckjord, chairman, E. J. Boothby, James A. Brown, Francis T. Carmody, R. L. Fletcher, George F. B. Owens, and J. French Robinson, was appointed to prepare a resolution covering the best possible method of dealing with this problem. The resulting resolution was unanimously adopted and presented to the Office of Civilian Defense in Washington, D. C. Subsequently a subcommittee consisting of Messrs. Boothby and Fletcher met with officials of the O.C.D. in Washington and explained the gas industry's recommendations.

As a result, the Office of Civilian Defense has distributed the following public statement for household gas users on procedure during air raid alarms:

"The American Gas Association recommends that you make no attempt to shut off the main gas valve. Simply turn off the stove burners that are lit but not the pilot light. If the house is badly damaged the main gas valve should be shut off. Once the main valve is turned off, for any reason, do not turn it on again yourself. Call for a trained man. Your local gas company is working out further detailed directions with your local defense council. Watch for these instructions, then follow them."

This statement will be used in future releases of the Office of Civilian Defense.

War Insurance Corp. Created by U. S.

JESSE JONES, Federal Loan Administrator, announced December 13 that, with the approval of the President, the Reconstruction Finance Corporation has created the War Insurance Corporation, with a capital of \$100,000,000, to provide reasonable protection against losses resulting from enemy attacks which may be sustained by owners of property in continental United States through damage to, or destruction of buildings, structures and personal property, including goods, growing crops and orchards.

Pending completion of details, any such losses will be protected from December 13, 1941, up to a total of \$100,000,000.

Accounts, bills, currency, debts, evidences of debt, money, notes, securities, paintings and other objects of art will not be covered.

For the time being, no premium will be charged for this protection, and no declaration or reports required, unless there is a loss.

Other terms and conditions for such protection will be announced as established. No protection will be available to owners of property who, in the opinion of the President, are unfriendly to the United States.

Modern Conveniences

(From "Economic History of the United States" by Professor Chester Wright, University of Chicago)

IN urban owner-occupied dwellings 95 per cent had electric light, 87 per cent indoor water closets, 84 per cent baths, 73 per cent gas for cooking, 50 per cent central heating, 21 per cent mechanical refrigeration, and 5 per cent, electric cooking."

Gas Supply Rules in California

THE California commission has outlined its own rationing pattern in the distribution of a scarce supply of utility service—in this case natural gas. The commission required natural gas companies in that State to enforce strictly so-called "shut-off" rules.

These rules require that domestic consumers be given prior claim on available natural gas and that industrial plants using surplus supplies must shut off their gas when ordered. Such order would be issued when there was only enough gas to serve domestic and commercial users paying higher rates than industrial consumers. The commission also ordered gas companies to take no new "surplus" customers unless such industrial users first set up stand-by fuel facilities.

The commission's announcement resulted from demands by industries engaged in defense work that, because of the vital nature of their operations, gas supplies should not be cut off in accordance with prevailing rules.—*Public Utilities Reports*, December 5.

Defense Advertising?

... Yes ... But Let's Make It Informative

By R. E. WILLIAMS

*New Business Manager, Binghamton
Gas Works, Binghamton, N. Y.*



R. E. Williams

IN this period of national emergency, when the safety and security of our country are at stake, it is only natural for utility companies to follow the trend by going "all out for defense" in their advertising. Besides building good will for the individual company, and strengthening morale within the territory it serves, it has a tendency to bridge the gap between the company and the consumer until

Salient features of the Binghamton advertising campaign suggest ways to keep the family healthy and happy without endangering the stability of the budget.

At the top of the page is a complete newspaper advertisement in the current series which began in October and will continue through the winter months. Above is reproduced the outside of a stuffer which is typical of the type enclosed with the monthly gas bill.

A standard element in the campaign is the *V* design, shown at right, built of dollars with the overprinted slogan, "Make Fuel and Food Dollars Buy More Health Defense."

the time when appliance sales floors again will be full to overflowing.

After analyzing the local situation, our New Business Department concluded that while our advertising definitely should tie in with defense, it should also give some consideration to the current problems of our customers.

The Binghamton area, in common with many other similar communities, has only a comparatively few industries actively engaged in manufacturing defense materials. As a result, most incomes have not kept pace with increased living costs. Rising food costs, in particular, are taking bigger chunks out of the pay check. Since the increased cost of living is everybody's headache with no exemptions, it presented a logical opening for an advertising program suggesting ways for our customers to keep their families healthy and happy, without endangering the stability of the budget.

It has been our custom in past years to sponsor an Old Stove Round-Up, joining with local gas range dealers in

a campaign extending over a period of several weeks. This year, instead of carrying on with the Round-Up tie-in, the campaign featured the theme of "Health Defense." Each advertiser included in his copy a "V" built of dollars, with the overprinted slogan, "Make Fuel and Food Dollars Buy More Health Defense."

Advertising and editorial copy pointed out the savings and health benefits effected through gas cookery. Automatic features of the modern gas range, scientific insulation, improved burners that use less gas, and other money-saving advantages were spotlighted. Likewise the importance of proper food preparation, preservation of vitamins and health-building minerals, use of cheaper meat cuts, menus for a balanced diet, and similar items were stressed. Our monthly gas bill enclosure also carried the same theme, with special money-saving recipes and cooking hints. Cooking demonstrations by our home service director followed the same general plan.

Obviously, our concentrated efforts were directed toward selling more gas ranges. But at the same time we conducted an educational program in the interests of the general public. Early in January we expect to resume our own range activity along similar lines.

Nearly every utility company is now wrestling with the knotty problem of appliance deliveries. Undoubtedly the situation will become much more complicated before it takes a turn back to normal. But in the meantime, utility advertising can perform a service which will pay dividends later on. Even if appliance sales are necessarily restricted, we most certainly want to retain the confidence and good will of our present customers. Informative copy will help to do the job.

Defense advertising? Yes, but let's not forget that the home folks have pressing problems, too—problems that merit our immediate attention. It's much easier to keep the home fires burning now than to let them die out and have to rebuild them later.

Accident Prevention Held Vital to National Defense

AN estimated 100,000 persons will have met their deaths by the end of 1941 due to accidents, many of which were avoidable. With our industrial tempo now at the highest peak in history and with every worker needed on the job, it is apparent that steps must be taken to curtail the rising tide of accidental deaths in industry which have increased nearly 8% over 1940.

To this end the National Safety Council in cooperation with representative industrial organizations, trade associations and others has mobilized a national Emergency Safety Program.

At the recent meeting of the Emergency Safety Council attended by representatives of a large number of national organizations, serious discussion was given to the fact that the number of accidents, many of which were off-the-job accidents, had increased, as had the number of traffic accidents. The two causes for this condition were analyzed as being (1) defense activities and (2) increase in automobile traffic due to addition of thousands of new workers in industry.

A number of committees were appointed at the conference, one of the most important of which is the Industrial Committee which presented a report outlining the following principles:

1. That management must take the leadership in accident prevention.

2. That employees' organizations cooperate with management in accident prevention activities.
3. That management make proper expenditures to correct hazards, educate employees and safeguard equipment.
4. That management should eliminate over crowding resulting from expansion.
5. That production schedules should be in accordance with safe operation.
6. That both employer and employee discontinue "taking chances."
7. That off-the-job accidents be recognized as losses to industry.

The gas industry is, of course, vitally interested in this program. Many gas companies have achieved splendid records in accident prevention and undoubtedly their efforts will be continued and extended during the present period to keep their records intact.

The Accident Prevention Committee of the American Gas Association has for a considerable period of time been actively engaged in all phases of accident prevention work. This committee will be enlarged and will continue its activities during the coming year in the preparation of Bulletins, Safety Letters and other important material and has planned to prepare a set of special posters for use by member gas companies.

Humanizing Program

A SURVEY conducted a short time ago by a large utility showed that contact through employees outweighed three to one any other method of promoting better customer relations. With this in mind, The Laclede Gas Light Company, St. Louis, Mo., has adopted a humanizing program designed to establish a corporate personality noted for kindly courtesy and good citizenship. As a first step, the company is keeping its employees informed as far as possible of what is going on behind the scenes.

According to a recent compilation of figures, employees of the Laclede company make 5,360,000 customer contacts annually, divided as follows: meter reading—2,400,000; bill delivery—2,000,000; customers' installations—300,000; telephone—300,000; customers' advisors—144,000; and collection—216,000.

The company is also launching an advertising program with a strong human appeal designed to improve customer relations.

Prize-Winning Homes Are Gas Heated

THREE out of four prize-winning houses in the 1941 architectural awards announced in the January issue of *House & Garden* magazine are equipped with gas heating installations. These homes are selected from among all those published in the magazine during the past year.

Both winners in Class I, devoted to single story houses, were gas equipped. These homes are located in Baltimore, Md., and Modesto, Calif. In Class II, confined to multi-story houses, gas equipment is a feature of the prize-winning home located in Berkeley, Calif.

First Aid Training



The Brooklyn Union Gas Company is training its employees in First Aid. Shown here are a group of girls learning the use of prone pressure resuscitation. Charles Barkus, of the New York City Fire Department, is the instructor

My Plan for Gas . . . To Increase Public Acceptance of the Ideal Fuel

PART I



Robert H. Lewis

LITTLE fault can be found with the primary product sponsored by a gas company. So well has engineering—research production, distribution and utilization—done its job, that gas generally is found to be a highly marketable commodity, possessing no defect to militate against complete Public Acceptance. Scientific appliance design and fabrication have kept pace with modern fuel manufacturing methods; utility financing for the most part has been more than adequate; the forces of the whole vast industry have been intelligently mobilized through the American Gas Association.

Route to Public Acceptance

If the product is right, why then is universal Public Acceptance not promptly forthcoming? The answer to that is to be found in examination of the local situation—conditions in the community, activity of competition, and the gas company's own performance.

A direct route to Public Acceptance is through providing more and better service to the public. This is a practical formula and will yield results where catch-words and slogans, subtle propaganda and costly advertising fail. Translated into gas company action this embraces such well-defined processes as:

1. Increasing the number of domestic meters in all sections where mains exist or can practicably be extended.
2. Increasing the number of appliances per consumer, aiming at a full complement of "all four" for every home.
3. Improving the quality of appliance performance through every available means.
4. Backing mechanical efficiency with human efficiency.

- The accompanying paper by Robert H. Lewis, which will be presented in three parts, was awarded first prize of \$150.00 in the prize paper contest conducted by the Committee on Personnel Practices of the American Gas Association. Second prize of \$75.00 was won by Theodore B. J. Merkt, manager, Flatbush branch, The Brooklyn Union Gas Company, and Charles W. Kimball, Hartford Gas Company, Hartford, Conn., received honorable mention.
- Presentation of the awards was made at the A. G. A. Annual Meeting in Atlantic City last October. Entries from 550 gas company employees located in all parts of the country were received in the contest.

By ROBERT H. LEWIS
Washington Gas Light Company
Washington, D. C.

5. Fostering the most cordial customer relations.

The foregoing will appear at once rudimentary—nothing that is not already known. That is admitted and, further, so well known are these principles that they are often taken for granted in the quest for Public Acceptance. Almost any company could be challenged to prove that these fundamental steps, with their major ramifications, are being systematically carried out as part of a complete program to insure the maximum of Public Acceptance.

One reason is that few companies actually *know* their market or their own operations in terms of the existing potential. Communities, like persons, are individuals. The "average community" is an abstraction and cannot be dealt with in any practical sense. Each locality presents needs of its own; and while the right program for one might be *adapted* to the needs of another, it can seldom be successfully *adopted* in

its entirety. Requirements of the specific community must be closely studied before an adequate plan can be cut to fit it.

This general consideration of the subject has lead to the important conclusion that an effectual local campaign for Public Acceptance must be individualized, geared to the particular demands of time and place. That method is pursued in the example which follows.

TYPICAL SURVEY

For purposes of illustration let us consider here without naming it an industrial city of medium size. Statistics reveal several years steady growth in population, number of dwellings, industrial employment, and retail sales. The gas company's annual send-out and appliance installations have not increased at a commensurate rate.

We will assume a complete analysis of market conditions has been conducted. This included a door-to-door appliance survey, in addition to a general inspection of local conditions bearing on gas sales and an impartial examination of the company's practices. The city-wide and company-wide stock taking, which was directed by a disinterested investigator, yielded an abundance of valuable data included in which—we will say—was the following:

1. Saturation

Dwelling units where gas service was enjoyed for any of the four domestic purposes was found to be 95% of the total number directly on or practicably accessible to the company lines. Considered separately, the volume of homes constructed within the past five years showed a less favorable degree of meter saturation—75%, reflecting an acute problem in the new construction field. Gas-fired appliances throughout

the entire area surveyed appeared in approximately the following comparative percentages:

<i>Ranges</i>	<i>Refrigerators</i>
Gas96	Gas05
Electric03	Electric70
Other01	Ice25

* Single family dwellings only.
(The gas water heater figure is meant to include both automatic and manual types, which were divided about 20-80%.

Gas is designated even if only used for summer operation.)

As nearly as could be determined from the survey findings, present replacements were proceeding at approximately the following rates (the percentage of all known replacements being given).

<i>Ranges</i>	<i>Refrigerators</i>
Gas95	Gas04
Electric05	Electric96

* 85% Automatic.

The above would be calculated from survey cards and other data covering most of the replacement in a recent 18-month period. (The survey is considered as covering six months, and the replacements cited were those reported as no more than a year old.) An attempt was made to classify replacements for earlier periods, and this rather incomplete record showed the trend in recent years definitely favored competition, notably in the case of cooking.

The full force of competition was felt in the new construction survey (covering the latest full year for which records were available). Dealing with single-family dwellings only, in main-served areas, the following percentage table illustrates this:

<i>Ranges</i>	<i>Refrigerators</i>
Gas80	Gas03
Electric20	Electric52
	None45

2. Rates

Operating tariffs permit the sale of gas to domestic consumers on a basis which compares favorably with competing fuels. The prevailing electric schedule offers an off-peak water-heating rate of one-cent per kw. hr., but the relative cost of gas for cooking (corrected for efficiency) is about one-half that of electricity in this case. A special gas space-heating rate (applicable to other appliances used in combination with house heating), on the basis of a normal degree-day winter, offers

not a unified employee training program. From time to time its new business department contacts the workers in an effort to obtain sales leads, but no broad educational effort is undertaken.

4. Trend Shown

Statistical evidence proves that the cooking load is being seriously undermined. Electric competition, a serious contender for the new construction business, is already threatening the replacement market. Gas refrigeration is making a fair showing, but the total potentialities are far from being realized in this field. Gas is getting only a small share of space heating in the older homes, proportionately less in the newer ones. (A preponderance of conversion burners in the former indicates that this type of equipment continues to dominate sales even though it has served the purpose of breaking into the house heating market.) The most favorable showing is in behalf of automatic water heaters (in new construction only, as the general condition indicates a wealth of replacement business still available). It may be assumed that the high percentage of new construction sales of this appliance is in part due to the increase in warm-air heating installations—oil as well as gas—which necessitates a separate unit for domestic hot water.

In view of the foregoing disclosures this is a company in the process of unconsciously beating a slow retreat—at best barely holding its own in the face of an ever-expanding opportunity. Despite a nominal increase in yearly send-out, it is apparent that the larger market created by accelerated building operations and the wider uses to which gas is being put today are being almost ignored.

Electric interests are gaining in range installations, shaking the people's confidence in gas—successfully challenging its Public Acceptance. Aided by the electric competition, fuel oil is almost blocking the entrance of gas into the new construction heating field. Here is indisputable evidence that Public Acceptance parallels the appliance sales curve.

(The remaining two installments of Mr. Lewis' paper, which will appear in later issues of the A. G. A. MONTHLY, present a suggested plan of action for the company described above and specific measures for increasing public confidence in gas service.)

<i>Water Heating*</i>	<i>House Heating*</i>
Gas90	Gas02
Oil03	Oil30
Coal07	Coal68

gas heating at about 35 cents per square foot of required hot water radiation. This is equivalent, in bare fuel cost, to anthracite coal at an advance of about 85% and fuel oil at an advance of about 40% over their present prices.

<i>Water Heaters</i>	<i>House Heaters</i>
*Gas85	Gas03
Electric09	Oil97
Oil06	

Building construction practice favors insulation, but it is far from the rule, especially in speculative construction which accounts for 65% of the annual construction in this particular city.

3. Policies

Replacement appliance selling is conducted by the gas company on a modest basis. The merchandising effort is restricted in a desire to encourage sales by the plumbing and heating trade and by the stores. Friendly relations are maintained with these groups, although no specific cooperative agreements exist. A fair effort is made to confine gas company sales to standard merchandise, but this is not extended to sales made by dealers which for the

<i>Water Heating</i>	<i>House Heating</i>
Gas90	Gas01
Electric04	Oil89
Oil06	Coal10

most part involve sub-standard units. That is conspicuously true in the case of ranges, dealers claiming that buyers are highly price-conscious. However, electric ranges encountered in the survey were almost invariably expensive models—well over the price of a fully equipped gas range.

The company being made the subject of this typical survey has no personnel office, in the absence of which there is

Building Today . . . F.H.A.

Housing and Defense

By THOMAS G. GRACE

New York State Director, Federal Housing Administration

FOR seven years the Federal Housing Administration has been encouraging private capital to build homes in the moderate price brackets. Its operations up to this time have brought more than five billion dollars out of bank vaults into general circulation. Because of the safeguards it has thrown around home investments it has won public confidence to an enviable degree. It is a self-supporting agency of the Government, organized on a permanent basis and it is going to take more than wars or rumors of wars to put it out of operation.

Naturally we have had to adjust ourselves to the emergency conditions which now exist. That has not been difficult because the framework of the insured mortgage and insured repair loan system comes well within the scope of the regulations set up by those entrusted with the conservation of vital materials.

More Building Tomorrow

I have been asked to answer a question: will we build tomorrow? My reply is, yes we certainly will. Not only will we build tomorrow but we will go on building today; in fact our insuring operations on advances for new construction and remodeling have not been seriously affected as yet and I see no reason why they should be.

Housing is not looked upon as an obstacle to defense; on the contrary it is a vital part of the defense program. But because many of the critical materials that normally go into housing are also necessary in the manufacture of weapons of defense there is need for conservation, which can be best



achieved by the placing of certain restrictions on private building. This has been done in a wise and sane way and with no danger to the continuance of needed construction in defense areas. Provision has already been made for the construction of 200,000 dwelling units by private enterprise during the six months' period ending in February and allocation for 200,000 additional units during the following six months is being sought. A very generous part of this work has been allotted to the New York area.

It is naturally a matter of importance for those private agencies which service homes to know just what the demands on them are to be in the immediate future. Each new living unit whether it is new construction or brought into existence by the remodeling of an existing property will require something from utility companies. If these are to continue serving with the same efficiency as in the past, they must plan ahead and that they cannot do unless they know something of what is before them.

If we are to adequately measure prospects it is necessary to know something of the situation as it has developed during the past few months. To properly conserve critical materials new agencies were set up by our Government. A blanket prohibition was placed on all construction outside of specific defense areas set up by the President. Within defense areas new procedures were made mandatory. These provide that priority ratings for materials may be applied for and granted under these conditions: the project is in a designated defense area, it represents needed housing, it will provide additional living units, it will be suitable for defense workers. Price limitations were also set up placing \$6,000 as the maximum for a house to be purchased and \$50 a month as a maximum for rental quarters.

Now as to procedure. An applicant for priority rating must first apply to the Federal Housing Administration. Right here I want to explain that such applications have nothing to do with our normal work. Because of our

Address before Metropolitan Gas House Heating and Air Conditioning Council, New York, N. Y., December 10, 1941.

knowledge of housing conditions and our facilities for handling such things we were selected as aides to the Housing Coordinator in making his determinations. Our processing of an application has to do only with its eligibility; whether the project involved meets the requirements set us. We have no finality of decision, merely passing applications along to the Coordinator with such endorsement as we deem proper. The Coordinator, in turn, passes the application on to the Office of Production Management with his own recommendations and there the matter ends. The applicant either gets the rating he asks or he doesn't.

I am happy to say that favorable action has usually followed where the project involved was clearly eligible for consideration. Priorities granted have not always been in as full measure as requested but this has been because what the O.P.M. has to give must be as equably distributed among applicants as possible.

Remodeling Projects Preferred

The highest ratings given have been to remodeling projects where existing single family homes are to be converted to multiple dwellings of two, three and four living units. There is a good reason for this. Such enterprises call for less materials, they are excepted from the Federal Reserve System regulations placing limitations on installment buying and more important than anything else, they meet the immediate need for living quarters. Let there be no mistake about it, defense workers moving into new territory must be accommodated at the outset in rental units. Ultimately many of them may buy homes but certainly not until they are assured of the tenure of their employment.

The facilities of Title I, of the National Housing Act are at the disposal of all property owners who wish to make such conversions, and many have already taken advantage of this. The Federal Housing Administration through its "repair for defense" program is doing everything possible to foster this movement, and we are asking for all the help that we can get from those who have a collateral interest in the creation of additional living units in our defense zones. This

includes you and other utility companies which have done so much to make the American home what it is today.

In the present crisis it is the objective of the Federal Housing Administration to keep all new construction and repair work to private capital. We do not want subsidized building if we can get along without it. Our beautiful communities in the New York area will certainly resist any considerable invasion of emergency building. Yet it is sure to come unless private enterprise takes care of our needs. So far our experience has been most encouraging. Builders, financial institutions, property owners and civic organizations are cooperating splendidly.

In the Federal Housing Administration the Metropolitan area consists of the five counties of New York City, Nassau and Suffolk counties on Long Island and the following counties north and west of the city: Westchester, Putnam, Dutchess, Rockland, Orange, Sullivan and Ulster.

Our operations in this area over the first eleven months of the current year are certainly encouraging when we consider that during a substantial part of that time building has been faced with defense restrictions. Applications for mortgage insurance have numbered 8,900 representing more than \$51,000,000; commitments issued have come to 13,600 for close to \$73,000,000 while conversions of mortgages to a premium-paying basis, which means actual sales of homes, amount to 6,900 for about \$36,500,000. This same ratio was maintained during October and

November, intense defense periods, and while there has been a falling off from 1941 operations it has been relatively small.

Mind you I do not want to convey the impression that residential building in this area is proceeding at a normal rate. We have not made the gains that would certainly have been ours in peace times, but I think you will agree that we have been pretty active and that the prospects of continuing to be are very good indeed.

In the New York City area we are especially favored. On Long Island, Bethpage-Farmingdale, Greenport, Brooklyn and Long Island City have been set up as defense areas. In other parts of our territory Staten Island and Poughkeepsie have been so designated. This means that all of the territory within reasonable commuting distance of these points is included, which gives us a complete coverage of our normally active zones.

I think we may safely say that we will go on building tomorrow as we are building today. We have the financial institutions to provide the money, the builders to build and the cooperation necessary to obtain the materials for needed projects. In fact for a continuance of our housing program through these troubled days the way has been cleared with only the common sense restrictions that houses be built within prescribed limits which represent the greatest need.

Advertising in its essence is simply telling a great many people about something in the quickest possible time at the lowest possible cost.

—Bruce Barton

History of Cooking Illustrated



The Open Fire The Fireplace The Wood Range The Coal Range Early Gas Range

Many requests are received by the American Gas Association for illustrations showing various stages in the history of cooking. Through the courtesy of Kenneth Fellows, advertising manager, of the Houston Natural Gas Corporation, the Association will mail free of charge to all who desire it a sheet reproducing the five sketches shown here, each sketch being about 3½ inches square. By adding a picture of the latest CP gas range to the sketches the series can be made fairly complete.

Kindly address your request to Publicity & Advertising Committee, American Gas Association, 420 Lexington Avenue, New York, N. Y.

Temperature Survey . . . of Natural Gas Pipe Lines and Underground Variations

Introduction

THE formation of gas hydrates in natural gas pipe lines depends on temperature and pressure conditions in the lines as well as on the presence of condensed water. The operating pressure in a pipe line may be determined easily and usually is available from the records of operation, but the temperature seldom is known. In cooperation with the American Gas Association, the Bureau of Mines, in its investigation of gas hydrates, conducted a pipe line temperature survey and studied underground temperatures at depths at which pipe lines ordinarily are buried and the relationship of these temperatures to prevailing atmospheric conditions.

In the pipe line temperature survey here reported, a study was made along a 22-inch natural gas pipe line originating near Amarillo, Tex., and extending northwestward through New Mexico into Colorado (Fig. 1). Some data also were collected along a 16-inch line extending southward from Amarillo. In the study of underground temperatures and their variations with atmospheric temperatures, recording equipment was installed at the Bureau of Mines stations at Amarillo, Tex., and Laramie, Wyo. Underground-temperature observations were taken over a period of approximately 4 years, and the data obtained are included in the complete report.

The work was conducted under a cooperative agreement between the Bureau of Mines and the American Gas Association. The study was part of the work of the Amarillo (Tex.) station of the Bureau of Mines and was conducted under the general supervision of R. A. Cattell,

• Herewith is presented an abstract of Bureau of Mines Report of Investigations 3590 entitled "Temperatures of Natural Gas Pipe Lines and Seasonal Variations of Underground Temperatures." Because of limited space, a number of temperature charts and other information have been omitted in the accompanying presentation. For those interested in the complete paper, it is available without charge upon request to the Bureau of Mines, Washington, D. C.

By W. M. DEATON¹ and
E. M. FROST, JR.²

chief engineer, Petroleum and Natural Gas Division, Bureau of Mines, Washington, D. C., and C. W. Seibel, supervising engineer, Amarillo Helium Plant, Amarillo, Tex.

Equipment

In making the pipe line temperature survey, two types of temperature-measuring equipment were used—recording thermometers and thermocouples. The recording thermometers were of the liquid-filled type, containing either alcohol or mercury. Multiple-pen or a number of single-pen instruments were installed where data on several temperatures were desired. At the more important installations, recording thermometers fully compensated for ambient temperatures were used. Where thermometers with uncompensated connecting tubing were employed it was necessary to make adjustment from time to time to avoid appreciable errors.

For measuring gas temperatures in pipe lines, separable thermometer wells were placed in the pipe line, which allowed the thermometer bulb to project about 6 inches into the gas stream. Where thermocouples were employed to measure the temperatures, copper-constantan couples

were used. For temperature measurements of the pipe line with thermocouples, the junctions were bonded to the pipe with a ferrous-base cement and covered with hair-felt insulation. Such thermocouples also provided means for checking the recording thermometers. It is estimated that an accuracy of about 1° was maintained throughout the pipe line temperature survey.

At times, when random measurements of underground temperatures were made, it was found convenient to use an ordinary mercury thermometer mounted on the end of a slender staff (see Fig. 2) in such a way that the thermometer bulb either would touch or could be pushed gently into the soil at the bottom of a hole drilled to the desired depth. It was found that the thermometer reached a stabilized temperature in about 5 minutes, and by quick removal and observation satisfactory readings could be obtained.

Multipoint recording potentiometers calibrated for iron-constantan thermocouples were used to obtain the temperature records at the Amarillo and Laramie stations. Underground temperatures at several depths were obtained by placing thermocouples in individual holes spaced about 6 inches apart drilled vertically into the ground to the desired depth. After the thermocouple junctions were placed on bottom, the holes were refilled with earth. The junction registering surface ground temperature was covered with approximately one-eighth inch of earth. The thermocouple registering the atmospheric temperature was placed in a Weather Bureau-type shelter alongside a mercury-in-glass thermometer with which the thermocouple was checked from time to time. The instruments received daily attention but re-

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quired only occasional adjustments. As in the pipe line temperature survey, it is estimated that in this phase of the study an accuracy of about 1° was maintained throughout the period covered by the records.

Pipe-Line-Temperature Survey

In making the pipe line temperature survey a number of temperature-measurement stations were established along a 22-inch gas transmission line operated by the Canadian River and the Colorado Interstate Gas Cos., extending from the Bivins compressor station of the Canadian River Gas Co. in the Texas Panhandle gas field to Denver, Colo., a pipe-line distance of 340

miles. The course of the line and the temperature measurement stations are shown in Figure 1.

To determine the point along the pipe line where the gas leaving the initial compressor station attains ground temperature, stations for measuring the temperature were established at each of the main-line valves between the Bivins station and Dalhart, Tex., a distance of 42 miles. The valves are approximately 10 miles apart. One additional station was established 5 miles from Bivins station. Temperature measurements at these stations were made with thermocouples. Data collected along this section of the line are il-

lustrated in Figure 3, which shows that the gas in the line attains ground temperature about 30 miles from the compressor station. During the period of test the gas flow averaged about 60 million cubic feet a day. As might be expected, in smaller lines with smaller flows the corresponding distance has been found to be less.

Several thermocouples were installed at the temperature station 5 miles from the Bivins compressor station to determine how far laterally from the pipe the ground temperature was affected by the warm gas in the line at that point. The thermocouples were buried in the ground at depths equal to the depth to the center of the pipe, which was 50 inches at this place. One thermocouple was attached to the side of the pipe; others were placed $\frac{1}{2}$, 1, $1\frac{1}{2}$, 3, 6, and 12 feet from the side of the pipe. Figure 4 shows the horizontal distribution of temperature at the time of the tests.

Black Forest Station

The temperature of the gas, the daily average atmospheric temperature, and the temperature of the ground at 6 inches, 18 inches, and at pipe line depth for an installation along the pipe line in an area known as Black Forest, about 15 miles northeast of Colorado Springs, Colo., were recorded. The temperature record for 1939 is shown in Figure 5. The complete records extend over nearly 4 years. A continuous record of the temperatures was obtained, but in plotting the data the daily average of hourly readings was used. This method of obtaining daily average temperatures is employed throughout the paper. It will be noted that although the air temperature varied greatly, the gas temperature remained relatively uniform and changed only with the season of the year. At this station the center of the pipe is 47 inches below the surface of the ground. The underground temperature at the depth of the center of the pipe line also was recorded at this station, but it agreed so closely with the temperature of the gas in the pipe line that it could not be shown as a separate curve, the difference between the

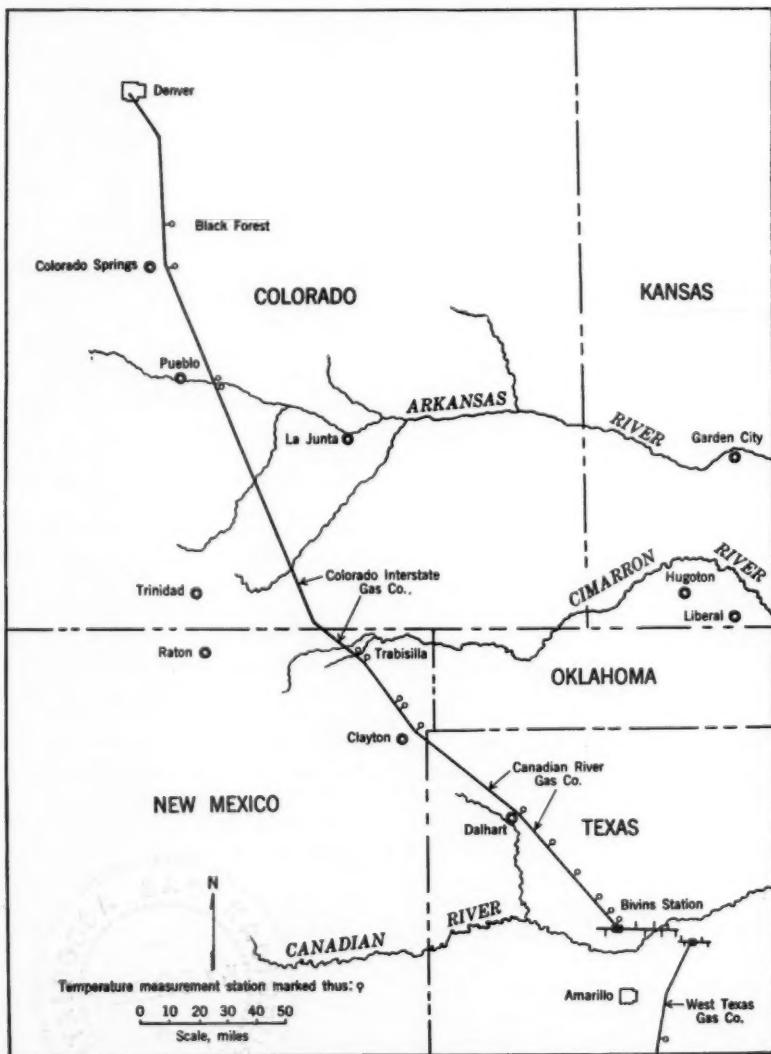


Figure 1. Map showing course of pipe line studied

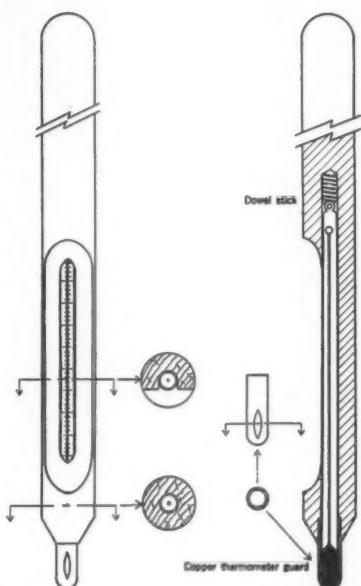


Figure 2.—Thermometer staff for measuring underground temperatures

two being not more than 1° at any time. This same conformity of gas and ground temperature at the depth of the center of the pipe line was observed consistently at other temperature measuring stations where the temperature was not influenced unduly by compressor stations, river crossings, or abrupt changes in the depth of the pipe line.

Figure 6 shows a section of the chart recording the temperatures at Black Forest thermometer station in 1936. It will be noted that changes in the gas temperature lagged 3 to 5 days behind the corresponding changes in atmospheric temperature, and that daily fluctuations in the gas temperature are entirely absent. This lag in gas temperature is typical of observations made at other points along the pipe line.

Temperature records obtained at another point along the Amarillo-Denver pipe line in the bottom of the Trabassilla Valley in northeastern New Mexico were also plotted. Here the depth to center of the pipe was 50 inches.

At the Arkansas River crossing near Pueblo, Colo., recording thermometers were installed in the pipe line on either side of the river. At this river crossing the 22-inch line divides into six 10-inch, 900-foot

runs laid on the river bottom. The normal change in gas temperature in crossing the river is about 2°F. throughout the year. The results of a test made in February 1937 are of interest, when the river was flowing full of ice and the temperature of the water was 32°F. In crossing the river the gas temperature dropped from 42° to 40°F. The gas flow was 42 million cubic feet a day. As the river crossing is on the suction side of a compressor station about a mile away, the pressure was relatively low—152 pounds per square inch.

As indicated in Figure 1, temperature stations were established at other points along this pipe line. The records at these stations were not as complete as the records obtained at the Black Forest and Trabassilla stations, and some of them did not extend over comparable periods of time. For these reasons and because the information obtained, in general, duplicates the findings at the above stations, the records are not included in this report.

Daily average atmospheric temperature and the pipe line temperature at an installation along the West Texas Gas Co. 16-inch line extending southward from Amarillo are shown in charts included in the complete report which is available from the Bureau of Mines. (See Fig. 1.) At this testing station it was not possible to install a thermometer well in the pipe line, and the thermometer bulb was placed in contact with the outside of the pipe and thermally insulated from the ground by a covering of hair felt. The depth to the center of the pipe was 32 inches. The pipe line temperature at this station responded much more rapidly to changes in at-

mospheric temperature than the gas temperature in the more deeply buried line at Black Forest and Trabassilla Valley installations along the Colorado Interstate Gas Co. 22-inch line.

Variations of Underground Temperatures

The temperature record for 1939 obtained at the installation of the Bureau of Mines station in Amarillo is shown in Figure 7. A similar record obtained at the Laramie (Wyo.) station is shown in Figure 8. At both of these installations records of the atmospheric temperature, surface ground temperature, and underground temperatures at depths of 6 inches, 18 inches, 3 feet, 6 feet and 10 feet were obtained. The atmospheric temperature was recorded every hour, and the surface and under-

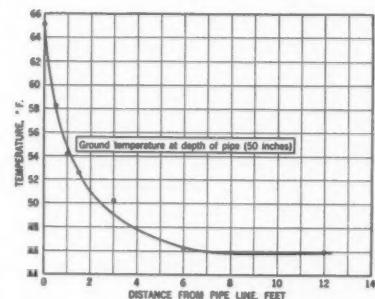


Figure 4.—Distribution of underground temperature at right angles to pipe 5 miles downstream from Bivins compressor station

ground temperatures were recorded every 2 hours. In preparing the figures, however, the average of the recorded temperatures for each day was plotted. These records constitute a good picture of the variations in underground temperature with daily and seasonal variations in atmospheric temperature.

It will be observed from Figures 7 and 8 that ground temperatures at depths of 3 feet and more are not affected materially by the daily fluctuations in temperature. At a depth of 3 feet, a lag of 2 or 3 days in temperature response may be expected following an abrupt change in atmospheric temperature. At a depth of 6 feet or more, the ground temperature responds only to seasonal temperature variations

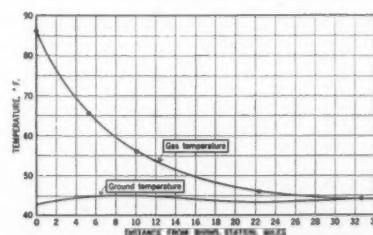


Figure 3.—Temperature along pipe line downstream from Bivins compressor station

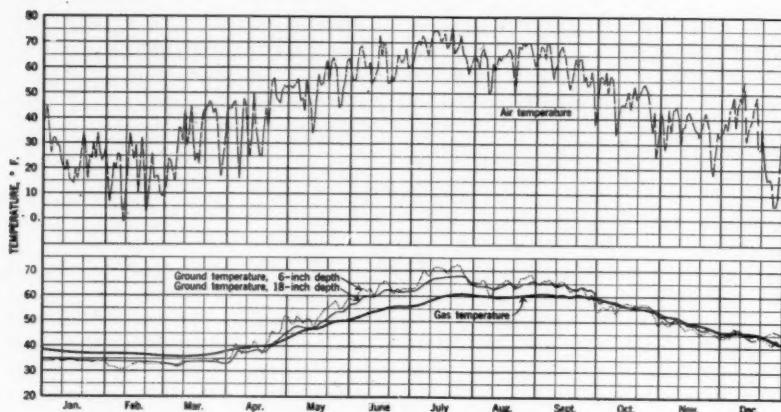


Figure 5.—Temperature record at Black Forest thermometer station, 1939

or to extended periods of abnormal temperatures.

The yearly temperature records show that the highest temperatures at depths greater than 3 feet usually occur in September, whereas the lowest temperatures at these same depths usually occur in March.

It will be observed by inspection of the figures that frequently the temperature of the surface of the ground is considerably higher than that of the atmosphere. During the daylight hours when the sun is shining brightly the temperature of the unshaded surface of the ground may be 20°, 30°, or even 50° higher than the atmospheric temperature observed by a shaded thermometer. This is illustrated more clearly in Figure 10, which shows the atmospheric and surface ground temperature record for a clear summer day at Amarillo, Tex. It is obvious that the underground temperatures will be affected by the surface ground temperature more directly than by the atmospheric temperatures.

The atmospheric temperatures shown on the charts are the daily average temperatures and do not show the temperature extremes. This condition needs

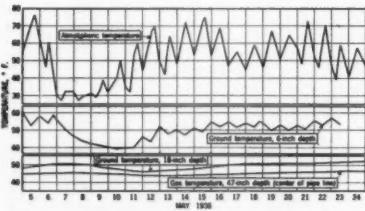


Figure 6.—Atmospheric, ground, and gas temperatures at Black Forest thermometer station

average is affected only moderately by these extremes. As an example, the lowest daily average temperature in Figure 8 is 2° F. on February 20, 1939. The temperature record centering around this date is shown in Figure 9 plotted on a more open time scale. Although the daily average temperature on February 20 is 2° above zero, the lowest recorded temperature is 12° below zero.

The kind of soil affects the rate of heat transfer through it and influences the rate of change of the underground temperatures; moisture in the soil also influences the rate of heat transfer. However, these factors were not known well enough to justify evaluation of these rates. The upper soil at the temperature installation at Amarillo, Tex., is a dark, heavy loam containing very little sand. At a depth of 5 feet caliche occurs and extends below a depth of 10 feet. As the rainfall in the Amarillo area is light, soil conditions sur-

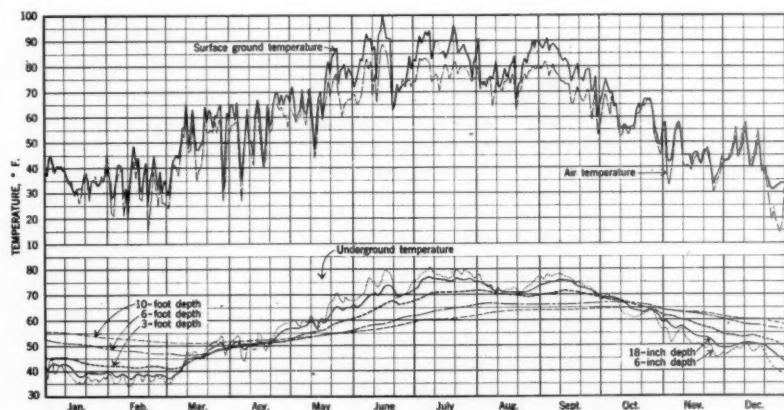


Figure 7.—Temperature record at Amarillo, Tex., 1939

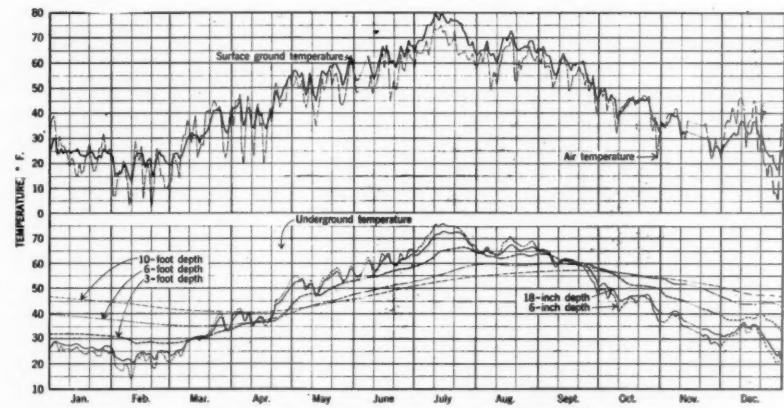


Figure 8.—Temperature record at Laramie, Wyo., 1939

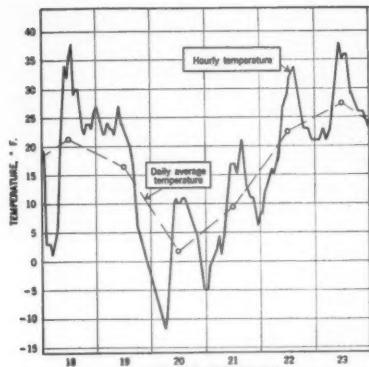


Figure 9.—Comparison of hourly and daily average atmospheric temperatures

rounding this installation may be considered dry. At the temperature installation at Laramie, Wyo., the soil is very sandy to a depth of at least 10 feet. The rainfall in this area is light, and the temperature records, therefore, should be representative of temperatures in a dry, sandy soil. The soil at the Black Forest installation is granite wash, and that at the Trabasilla installation is a silt deposit consisting largely of light-color clay. The soil at the temperature installation on the West Texas Gas Co. pipe line is similar to the soil at the temperature installation at Amarillo.

The possibility of the formation of gas hydrates in gas transmission lines makes it important to know the temperature of buried pipe lines transporting natural gas. A study of pipe line temperatures shows that the tem-

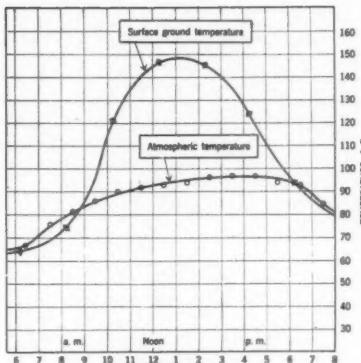


Figure 10.—Comparison of atmospheric and surface ground temperatures

perature of the lines and of the gas therein is essentially the same as the temperature of the ground at a depth corresponding to that of the center of the pipe, unless there are disturbing influences, such as compressor stations, river crossings, or abrupt changes in the depth of the pipe line. Changes in the temperature of buried pipe lines may lag behind changes in atmospheric temperature by several days, and this lag depends on the depth to which the pipe line is buried.

Records of ground temperatures ranging from the surface to a depth of 10 feet are presented in the report. They show, for the areas studied, that the lowest temperatures reached at depths of 3 to 10 feet occur during February or March and that the highest temperatures at these depths occur during August or September.

Natural Gas Executives Plan Convention

In preparation for the thirty-seventh annual Natural Gas Convention, American Gas Association, New Orleans, La., May 4-7, the following committees of the Natural Gas Section met in Kansas City, Missouri, on December 12:

General Program Committee—Burt R. Bay, Chairman; President, Northern Natural Gas Company, Omaha, Nebr.

Natural Gas Production Committee—C. U. Daniels, Chairman; Vice-President, Oklahoma Natural Gas Co., Tulsa, Okla.

Natural Gas Transmission Committee—B. M. Laulhere, Chairman; Technical Supervisor, Southern California Gas Company, Los Angeles, Calif.

Residential Natural Gas Sales Committee—C. B. Wilson, Chairman; New Business Manager, Arkansas Louisiana Gas Co., Little Rock, Ark.

Industrial & Commercial Natural Gas Sales Committee—D. W. Reeves, Chairman; Industrial Sales Manager, Oklahoma Natural Gas Co., Tulsa, Okla.

J. French Robinson, President, The East Ohio Gas Company, is chairman of the Natural Gas Section.

At this meeting plans were drafted for a program which will endeavor to solve the war emergency problems of the natural gas industry. It is planned to have full discussions on these problems as they apply to production and transmission of natural gas as well as to the sale of natural gas. It is the purpose of the 1942 convention to look to the urgent questions of the hour and at the same time to plan for the future in order that the natural gas industry may continue to uphold its record of service to the public.

First Gas Light in 1824

Gas lighting came to New York City in 1824. A house in Water St. was first to try the newfangled method.



Luncheon meeting of A. G. A. Natural Gas Convention Program Committee at the Hotel Mueblebach, Kansas City, December 12. In the picture are, left to right, around the table: J. I. Cormany, Kansas City; Melvin V. Harlin, Bartlesville; John L. Gere, Bartlesville; J. G. Dickinson, Amarillo; C. H. Koinm, Kansas City; F. M. Rosenkrans, Kansas City; J. R. Guidroz, New Orleans; H. L. Gaidry, New Orleans; J. H. Warden, Tulsa; E. L. Rawlins, Shreveport; Robert W. Hendee, Colorado Springs; B. R. Bay, Omaha; E. H. Poe, New York; E. M. Borger, Pittsburgh; H. J. Larson, Omaha; Julian L. Foster, Dallas; E. C. Joullian, Oklahoma City; Lee Woodward, Alva; Lyman H. Bell, Kansas City; J. C. Reinbold, Kansas City; Clyde C. Phillips, Columbus; Robert W. Ducker, Tulsa; Ray T. Ratliff, Kansas City; J. P. Crowe, Kansas City, and Paul C. Ford, Kansas City. Inside of table, left to right: F. S. Kelly, Jr., Shreveport; D. W. Reeves, Tulsa; C. J. Dodds, Lawrence; H. C. Porter, Kansas City; C. U. Daniels, Tulsa; C. B. Wilson, Little Rock; J. W. West, Jr., New York; and J. C. Sackman, Hammond. Also attending the meeting but not shown in the picture were: A. L. Mullergren, Kansas City; F. L. Rupp, Independence, and Jack Torbert, Kansas City

Personal AND OTHERWISE

Texas College Honors Frank C. Smith



Frank C. Smith

F. C. SMITH, president of Houston Natural Gas Corporation, has been named chairman of the board of directors of Texas College of Arts and Industries, Kingsville, for the biennium which began September 1, 1941.

Mr. Smith became a member of the board of A. & I. College in January, 1939, his appointment being made by Governor Allred and later certified by Governor O'Daniel. The new honor bestowed upon Mr. Smith follows by only a few months the announcement of his being named chairman of the board of trustees of the gas industry's newly formed Institute of Gas Technology.

Gibbs Transferred

ROBERT F. GIBBS, since 1939 commercial agent for Southern Counties Gas Company's Eastern district with headquarters in Pomona, has been named commercial agent for the company in Santa Maria, effective December 1.

His place is being filled by Floyd S. Parmenter, who has served since 1934 as sales representative in Monrovia. Mr. Parmenter has been one of the most consistent salesmen with the company, having won numerous prizes in American Gas Association contests during the past several years.

Humm Takes New Post

ALBERT W. HUMM has joined Hixson-O'Donnell Advertising, Inc., New York, to organize and manage a public utility and home appliance department. Mr. Humm has had wide experience with public utility and home appliance advertising and promotion. For twenty years he was advertising and sales promotion manager of Standard Gas Equipment Corporation, manufacturers of domestic and hotel ranges and equipment.

After leaving Standard Gas Equipment Corporation, Mr. Humm became associated

with the advertising agency of Williams & Saylor, Inc., as director of the gas merchandising division. In this capacity he created and developed the first national water heater program of the Association of Gas Appliance and Equipment Manufacturers. For several years he handled the national gas refrigerator program.

Refrigerating Engineers Elect Dr. Hainsworth



Dr. Hainsworth

in St. Louis, Mo.

Dr. Hainsworth has been engaged in refrigeration research more than twenty years. In 1933 he was awarded the Charles A. Munroe Award by the American Gas Association for his contributions to the gas industry in the field of scientific research.

John F. O'Donnell Dies

JOHN F. O'DONNELL, widely known Eastern sales representative of the American Stove Company, died November 19 in St. Elizabeth's Hospital, New York City. He was 49 years old.

A native of Pittsburgh, Mr. O'Donnell had been associated with the gas industry for the past seventeen years, first as sales representative for Standard Gas Equipment Corporation and then as Eastern sales representative of American Stove Company.

Mr. O'Donnell was an active participant in work of the American Gas Association, recently serving as a member of the Industrial & Commercial Gas Section's committee which organized and conducted the A. G. A. Combined Exhibit at the National Hotel Exposition. He was considered an authority on gas food service equipment, and was responsi-

ble for the switching from coal to gas for cooking in a great many leading hotels, restaurants and institutions.

"Jack" O'Donnell had many friends in the hotel and restaurant industries as well as in the gas industry. His passing is regretted by all members of the Industrial and Commercial Gas Section.

Heads A. G. A. Personnel Practices Committee



JAMES D. DINGWELL, Jr., assistant vice-president in charge of personnel relations of the Washington Gas Light Company, Washington, D. C., has been appointed chairman of the Committee on Personnel Practices of the American Gas Association by George S. Hawley, president of the Association. This committee is now in its sixth year as an Association activity and is engaged in a continuous study of the industrial relations problems of the gas industry.

Mr. Dingwell has been active in the affairs of the American Gas Association having served in the Commercial Section prior to becoming a member of the Committee on Personnel Practices in 1938.

He entered the public utility industry in 1924 in the accounting department of the Blackstone Valley Gas and Electric Company and the Pawtucket Gas Company. He later became identified with the sales department of that organization and in 1929 was appointed sales manager.

In August 1933, he accepted an appointment as assistant general sales manager of the Washington Gas Light Company, Washington, D. C. In this capacity he gained diversified experience both in merchandising and personnel organization and administration, and in 1937 was appointed assistant vice-president in charge of personnel relations.

Goth Gets U. S. Job

CARL A. GOTHE of Iowa City, Iowa, has been appointed heating engineer for the United States Government, with headquarters at Omaha, Nebraska. He will be a civilian employee. Mr. Goth will design and supervise installation of heating systems for government building projects now under construction.

Since 1938, Mr. Goth has been heating sales engineer for the Iowa City Light and Power Company, at Iowa City, Iowa. He had previously been air conditioning and heating engineer for Adams Wholesalers at Waterloo, Iowa, and heating engineer for the Iowa-Nebraska Light and Power Company at Lincoln, Nebraska.

Appointed to A. G. A. Copy Committee

THOMAS J. STRICKLER, chairman of the gas industry's National Advertising Committee, announces the appointment of three additional members to the Copy Committee which works with the agency, McCann-Erickson, Inc., of New York, in executing the details of the campaign.

The three new appointments are J. S. Spaulding, advertising manager, of the Southern California Gas Company, Los Angeles, Calif., who has served as a member of the national committee since the inauguration of the campaign six years ago; Thomas H. Spain, advertising manager, Public Service Electric & Gas Company, Newark, N. J., and Charles W. Kimball, sales manager, The Hartford Gas Company, Hartford, Conn.

Southern Counties Gas Men Advanced

RETIREMENT of M. R. Thompson as first vice-president in charge of construction, Southern Counties Gas Company, on December 1, brought about the following changes in the company's general office organization:

F. A. Hough, formerly distribution engineer, was made executive engineer and assumes general supervision of operation and construction.

He will be assisted by C. F. Briscoe, formerly Southern California Gas Company engineer, H. A. Faull, and N. K. Senatoroff. Mr. Briscoe's title will be construction engineer; Mr. Faull, formerly assistant distribution engineer, will be meter and regulator engineer; Mr. Senatoroff, formerly research engineer, will be chemical engineer.

Indiana Chamber Honors Gas Industry Men

A NEW honor, the presidency of the Indiana State Chamber of Commerce, has been conferred on Louis Ruthenburg, president of Servel, Inc. Mr. Ruthenburg was elected at a meeting of the Chamber in Indianapolis, Dec. 4. At the same meeting, Dean H. Mitchell, president of the Northern Indiana Public Service Co., Hammond, was named first vice-president.

Koppers Products

KOPPERS Company, Tar and Chemical division, has just published an eight-page folder which summarizes all of Koppers' important products, plants and services. The list ranges from Koppers coals and coke to light oil plants and purification systems; from valves, castings, forgings, couplings and piston rings to roofing, tar-base paints, and pressure-treated timber products.



Millions of women are becoming aroused to the need for a better understanding of nutrition. Here is part of a crowd of 625 which packed The Brooklyn Union Gas Company's Gas Mart recently for a cooking demonstration by Miss Jeanne Wake, Home Service lecturer (in left foreground). The Brooklyn utility is featuring attractive Dollar-Stretcher meals that include all nutritional requirements

Utilities Priority Order Amended

PUBLIC utilities are forbidden to undertake any substantial expansion of property or equipment without express permission from the Office of Production Management by amendments to Preference Rating Order P-46, issued December 11 by the Division to Priorities.

The order as amended applies to all producers engaged in supplying electric power, gas, water, public sanitation services, or central steam heating, regardless of whether or not they have applied for priority assistance by executing an acceptance of the order. It applies to publicly owned as well as private utility companies, and will cover Rural Electrification Administration cooperatives.

The amendments are in line with the policy of disapproving projects for new or expanded utilities unless they are essential. However, projects already under way and at least 40 per cent complete as of December 5 may be finished if the utility has supplies on hand for the purpose, or is granted priority assistance to obtain them.

With that one exception, utilities may not without permission withdraw materials even from their own stores or inventories for expansion projects costing more than \$1,500 in the case of underground connections or more than \$500 in other cases.

Preference Rating Order P-46 as originally issued on September 17, 1941, permitted specified utilities and their suppliers, after executing an acceptance of the order, to use an A-10 rating to obtain maintenance and repair materials and operating supplies. It contained inventory and other restrictions which were construed not to apply to utilities which did not execute the acceptance or apply for priority assistance.

With the latest amendments, the order covers all utilities of the types specified, without exception.

Utilities will continue to receive priority assistance when necessary to obtain operating supplies and materials needed for maintenance and repair, with certain restrictions based on use during 1940.

All utilities are required to maintain a continuing inventory of material included in stores accounts.

Fire Protection Urged

STRIKING photographs of recent spectacular fires which have hampered the national defense effort form the basis of a 20-page booklet "National Defense Fires" which has just been released by the National Fire Protection Association, 60 Batterymarch St., Boston, Mass. Accompanying text points out that thousands of other fires, less spectacular but equally serious, have a tremendous effect upon the defense program.

In many defense plants, the booklet points out, fire protection has been a paramount consideration of planning but in many others, fire safety has been mistakenly sacrificed to quick production. Adherence to the well-established standards of the National Fire Protection Association is urged to combat fire losses. A list of publications of the Association is included in the booklet.

In 1821 a Natural Gas spring at Fredonia, N. Y., excavated to 27 feet, supplied 30 burners. The light from each burner was regarded as equal to that of two "good candles."

AFFILIATED ASSOCIATION *Activities*

Post-War Spurt in Building Predicted at Metropolitan Council Meeting

By FRED T. COLWELL

AT the Governor Clinton Hotel in New York City, on December 10, the Metropolitan Gas Heating and Air Conditioning Council held its annual Christmas meeting. A strong sense of seriousness and gravity had been injected into these meetings as a result of the War, then in its second day, and each speaker's message was aimed to contribute something in facing the emergency.

The guest speaker, Thomas G. Grace, state director, Federal Housing Authority, was unable to be there; however, he sent his assistant Harold M. Clay to deliver his talk. Mr. Grace answered the question, "Will we build tomorrow?" by replying, "Yes, we certainly will. Not only will we build tomorrow but we will go on building today; in fact our insuring operations on advances for new construction and remodeling have not been seriously affected as yet and I see no reason why they should be."

The Council also learned from Mr. Grace that provision has already been made for the construction of 200,000 dwelling units by private enterprise during the six months ending in February and allocation for 200,000 additional units during the following six months is being sought.

Recommends A. G. A. Report

In opening the meetings, Henry C. Rohrs, chairman of the Council, and house heating manager of the Elizabethtown Consolidated Gas Co., Elizabethtown, N. J., reviewed the year's activities. In the course of his address, Mr. Rohrs recommended to the members the reading of Interim Bulletin 65 entitled "New Sales Methods," prepared by the Residential Section of the American Gas Association; the October issue of the A. G. A. MONTHLY in which was contained an article on gas house heating test data; and the latest edition of the Gasco guide. All these publications can be secured from Association Headquarters.

R. B. Loomis, of The Brooklyn Union Gas Co., was the first speaker and he delivered a message from the president of his company, Clifford E. Paige. Mr. Paige saw an encouraging sign in these black days by noting that post-war planning was already being considered. Gas in house heating has become public necessity, he told the members, and selling, advertising and promotional planning must go on.

John Droege, purchasing agent, Brooklyn Borough Gas Co., Brooklyn, N. Y., then discussed "Year 'Round Hot Water from Your Heating Plant." In pointing out the advantages of a new development, the combination boiler and water heater (which was described in detail in the May issue of the A. G. A. MONTHLY), Mr. Droege said that during July and August of 1940 there had been no high bill complaints out of a total of 31 installations, and during 1941 there had been only 10 complaints received from a total of 300 installations, none of which had been justified.

"Unit Heaters Can Do It," was the topic offered by Robin A. Bell, assistant sales manager, Surface Combustion Corp., Toledo, Ohio, and member of the A. G. A. Committee on Industrial Space Heating. Demonstrating his sketching ability as well as knowledge of unit heaters, Mr. Bell drew diagrams displaying the many different types of installations.

Mr. Bell also emphasized the present-day problem of critical materials. He was convinced, however, that the gas industry would find substitutes and will be able to dispense with many of these critical materials now being used.

During the afternoon session, Ray M. Conner, Director of the A. G. A. Testing Laboratories, Cleveland, Ohio, talked on strengthening the A. G. A. testing program. Mr. Conner was particularly struck with the progress in gas summer air conditioning, which he had noticed in his travels about the country.

Harold S. Burkett, engineer of commercial gas utilization of The Brooklyn Union Gas Co., Brooklyn, N. Y., spoke on "A Cooling Job by Gas." In conjunction with his remarks, Mr. Burkett showed colored slides on the construction and installation of refrigeration methods. It was Mr. Burkett's opinion that after the War, there will be a great spurt in air conditioning.

The H. G. Wellsian task of telling us "the shape of things to come" fell, by way of conclusion, to B. A. Seiple, vice-president of the Jersey Central Power and Light Co., Asbury Park, N. J. Not only should there be a CP program for ranges, water heaters, etc., but there should be one for gas, the fuel, he advised. The gas industry must take the offensive, he said.

Gas Cavalcade Feature of P. G. A. Meeting

HIGHLIGHT of the Pennsylvania Gas Association's annual mid-winter sales meeting, to be held on January 23, at the Benjamin Franklin Hotel, Philadelphia, will be the first presentation in the East of the famous "Cavalcade of Gas."

A brand-new, lively extravaganza, the "Cavalcade of Gas" depicts the history, growth, and development of gas and gas appliances. It has been shown only on two other occasions, and both times drew capacity crowds and enthusiastic responses.

The "Cavalcade" offers as impresario E. Carl Sorby, popular sales promotion director of the George D. Roper Corporation. This role gives Mr. Sorby a perfect opportunity to display his many dramatic talents, which have won him a wide following throughout the gas industry.

Other roles are capably filled by well-known representatives of gas appliance manufacturers, including R. L. Cox, Detroit-Michigan Stove Company; Clarence Spiegel, Servel, Inc.; L. C. Ginn, American Stove Company; Ted Carrow, Cribben and Sexton Company; E. W. Cone, Ruud Manufacturing Company, and H. C. Gurney, Surface Combustion Company.

In addition to the "Cavalcade," timely discussions of new business phases of the gas industry will be offered the P. G. A. group. John E. Bogan, sales promotion manager, Association of Gas Appliance and Equipment Manufacturers, will outline "Selling Under Today's Conditions," and G. M. Rohde, Jr., manager of research, Ruud Manufacturing Company, will explain "New Methods of Promoting Water Heater Sales."

Theodore R. McKeldin, a prominent Baltimore lawyer, will be guest speaker at the luncheon.

Southern Gas Association

A STREAMLINED program, keeping in touch with the present day developments, will be in vogue at the meeting of the Southern Gas Association, Feb. 9-11, at the Biltmore Hotel, Atlanta, Ga., according to L. L. Baxter, secretary of the Association. Outstanding speakers who will appear on the program include A. B. Paterson, president, New Orleans Public Service Inc., who will talk on Personnel, and George S. Hawley, president, American Gas Association.

Frank C. Smith, president, Houston Natural Gas Company, will deliver an up-to-the-minute address on "The Institute of Gas Technology." George S. Jones, of Servel Inc., and Davis DeBard, Stone and Webster Service Corp., are among the speakers to be heard on this program.

H. Carl Wolf, president, Atlanta Gas Light Company, is president of the South-

ern Gas Association. The Residential Sales Conference is directed by J. H. Warden, Oklahoma Natural Gas Company; the Industrial Gas Sales Conference is headed by H. G. D'Spain, Mississippi Public Service Company; the Technical

Gas Sales Conference is under the leadership of H. N. Oldham, New Mexico Eastern Gas Company; and the Home Service Conference is headed by Emma Wood, Louisiana Public Utilities Company, Inc.

Beware of Advertising That "Wins the Argument but Loses the Sale"

By W. L. JONES

Sales Manager, The St. Louis County Gas Co., Webster Groves, Mo.



W. L. Jones

WIN the argument and lose the sale." How often we have thus admonished our salesmen. And then—having disposed of the salesman's trouble—we turn to the advertising that "paves the way for the salesman."

"What's this? Oh yes, copy for that gas range broadside.

Huh. No umph. Everybody knows all that stuff. Miss Smith, ask Jim from the advertising department to come down."

"Jim, this gas range copy just won't do. You haven't got any of the things in here that I told you to put in. Of course, it will have to be tactfully done—I can't give you the exact words, I'm no copywriter, but you have got to meet this competition by pointing out some of those things I told you about. Tell 'em their ranges are slow—and dirty. Ours are twice as fast. Let the chips fall where they may. We have got to get down to brass tacks." And so it is that so much advertising misses the point completely. The advertiser is so sensitive to the claimed superiority of his competition that he actually buys advertising space to say "it ain't so"—just as if he thought that without such copy people were going to think that he agreed with his competitor.

There are two ways to meet the advertising claims of competitors. One, the wrong way, is to point out wherein the claims are in error. Tell the public that the competitive range is slow, that it is hard to clean, that the competitive refrigerator is noisy, unreliable and that only with your product can perfection be attained. Offend the customer's sense of propriety, tell him that you know he hasn't brains enough to understand these things without your advice but that he can count on you for the real "low-down." I think it will be agreed that this is the way to start an argument—the same kind of an argument you told your salesmen to avoid. Yes, and with such advertising, you can probably lose more sales than any salesmen.

What is the right way? In the first place it is the hard way, it takes more thought. Find out the reasons why your product or your service is better than your competitor's. Sure, this brings you right back to finding your competitor's weak spots but having found them keep them a deep dark secret.

But now you are prepared to write some real copy. Know your competitor's weaknesses and play up the reasons why your product is strong on these particular points. Don't take even a backhanded slap at competition.

And here is the pay-off. If you use the right kind of copy and tell the story forcibly but accurately and, for each point, keep right to the point where you are strong (and your competitor is weak) the reader is going to finally come up with an original idea—at least he will think it is original. If he has given any thought at all to your competitor he is going to conclude some rather unfavorable things about him and is going to certainly check up on these points before he buys. If he has never considered your competitor then you have at least not suggested that he do so.

CONVENTION CALENDAR

JANUARY

Jan. 26-30 International Heating and Ventilating Exposition Philadelphia, Pa.

FEBRUARY

Feb. 9-11 Southern Gas Association and A. G. A. Southern-Southern Gas Sales Conference Biltmore Hotel, Atlanta, Ga.
17-18 Eastern Natural Gas Sales Managers' Round Table Roosevelt Hotel, Pittsburgh, Penn.
23-24 Mid-West Regional Gas Sales Conference Edgewater Beach Hotel, Chicago, Ill.

MARCH

Mar. 2-6 American Society of Testing Materials Cleveland, Ohio.
12-13 A. G. A. Industrial and Commercial Gas Sales Conference William Penn Hotel, Pittsburgh, Pa.
16-17 Wisconsin Utilities Association, Gas Section Schroeder Hotel, Milwaukee, Wisc.
19-20 New England Gas Association Boston, Mass.
23-24 Oklahoma Utilities Association Biltmore Hotel, Oklahoma City, Okla.

APRIL

Apr. 13-15 Mid-West Gas Association Sioux City, Ia.
19-21 Gas Meters Association of Florida-Georgia Savannah, Ga.

21-23 Southwestern Gas Measurement Short Course University of Oklahoma Norman, Oklahoma
27-30 U. S. Chamber of Commerce Washington, D. C.

MAY

May 4-6 A. G. A. Natural Gas Convention New Orleans, La.
5-7 A. G. A. Distribution Conference New Orleans, La.
11-15 National Fire Protection Association Atlantic City, N. J.
25-27 A. G. A. Production and Chemical Conference New York, N. Y.

JUNE

June 4-5 Canadian Gas Association Windsor Hotel, Montreal

SEPTEMBER

Wk. of Sept. 29 American Gas Association Annual Meeting San Francisco, Calif.

OCTOBER

Oct. 5-9 National Safety Congress and Exposition Chicago, Ill.

NOVEMBER

Nov. 17-22 National Chemical Exposition and National Industrial Chemical Conference Stevens Hotel, Chicago, Ill.



Accounting SECTION

LYMAN L. DYER, Chairman
L. A. MAYO, Vice-Chairman
O. W. BREWER, Secretary



Accounting Department Functions in Gas Diversion Cases

By J. B. McKELVEY

Philadelphia Electric Co.
Philadelphia, Pa.

THIS revenue reducing bugbear of public service gas companies, termed "unaccounted-for gas," has the faculty of acting as a complete cloak to that quantity of gas which has been manufactured for sale but, when used, literally by-passes our cash register because it has been diverted from metering by theft. We are naturally hesitant to subscribe to the unpleasant thought that the quantity of stolen gas may be a major factor in the vast "unaccounted-for" total reported yearly, or that the unchecked continuation of existing tampering cases can result in a problem of major proportions. We should, however, face the situation with realism and consider the advisability of safeguarding action based on reasonable knowledge of the facts, rather than contentedly stand by on the highly questionable presumption that all unaccounted-for gas revenue is caused by transmission losses. This article has been prepared to explore various phases of tampering and to illustrate the value derived by enrolling the assistance of the Accounting Department in the detection and consequent conclusion of gas theft cases.

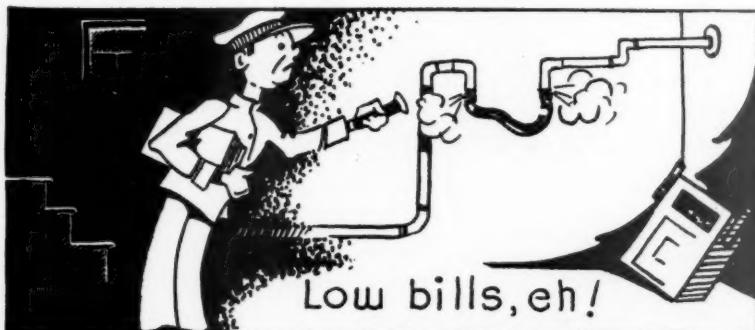
Service Diversion

The development of electric diversion cases caused the Philadelphia Electric Company to formulate a program to counter

ity of cases the gas was consumed for house heating through the surface and oven burners of gas ranges and/or the usage of space heaters located throughout the premises.

An analysis of cases where the gas theft had been practiced for a period of years, prior to detection, uncovered the following information: In many cases the meter readers were repeatedly delayed at the door before being admitted to the meter. On properties containing an idle gas main from which the meter had been previously removed, it was likewise noted that meter readers encountered the same delaying action before being admitted to read the electric meter. The most common delaying pretexts are, "Wait until I get the dog out of the cellar." and "Will you call back later?" Further, in cases where gas theft reduced the metered registration of appliances observed on the premises, the meter readers received information such as, "Using less to economize."—"Away from home."—"Less members in family." etc. In many instances such explanations are refuted by a comparative study of the electric meter registration.

Consideration of the foregoing prompts the thought that in the execution of rou-



tine duties the meter readers and billing clerks of the Accounting Department offer a continual threat to the successful perpetration of tampering acts. We then reach the reasonable question, "Why not equip the personnel of the Department with sufficient knowledge to enable them to readily sense and report the possible existence of tampering cases?" On the supportable conclusion that gas theft on our lines is a fact and not a myth, we have assigned an important tampering detection responsibility to the meter reading and billing groups of the Accounting Department. Their activity is closely co-ordinated with the important functions of the Operations Department, Customers' Service Department, and related groups in the discovery of tampering situations. Reports of tampering or suspicion of tampering originating through the above sources are forwarded to the Meter Irregularities Group of the Accounting Department. The latter group is charged with the complete responsibility of following all cases to a satisfactory conclusion and, in addition, is required to educate employees in methods designed for tampering detection.

Meter Reading and Billing Groups

To insure beneficial results in enlisting the assistance of the meter reading and billing groups in the detection of tampering cases, it is essential that a carefully planned training program be prepared. In brief, if we can impart sufficient knowledge to the employees on the various "tell-tale" signs of tampering, then their operations can become invaluable in protecting company-interests against theft. Further, it is important that the employees be equipped with such information to a degree that

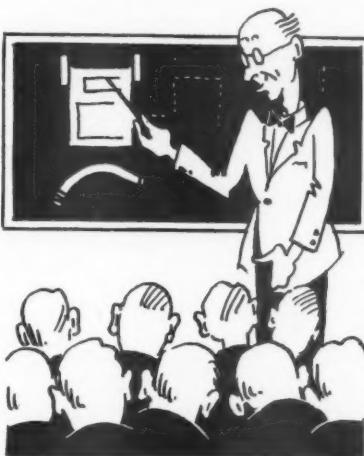


provides for the quick recognition of a possible tampering situation; otherwise, the program would become top-heavy through interference with regular work routine. That it is possible to attain the desired results has been proved by the valuable work of these employees in the detection of gas and electric theft cases following proper training on that subject.

Educational Program

Our educational program provides that tampering detection information be presented to the employees in small group sessions along the following lines: Metering equipment parts are identified to es-

tablish the potential points of tampering practice. Equipment, bearing visible evidence of tampering, is studied by the group to learn how tampering creates an abnormal appearance of certain parts of the equipment. Stress is placed on the fact that the continual practice of a tampering act invariably leaves evidence that can be readily detected by employees properly equipped with knowledge. Information is supplied with respect to the gas consuming characteristics of appliances, such as, ranges, water heaters, space heat-



ers, etc., for a comparison of the metered registration with appliances noted on the consumer's premises or with a list of the appliances listed on the company's records. Pretexts most frequently employed by consumers to delay meter readers pending removal of the tampering device are examined with a view of determining under what circumstances the ulterior motive may prevail. The employees are instructed in the preparation of written requests for complete examination of the metering equipment by the Meter Irregularities Group under conditions which may indicate inaccurate meters or theft cases.

Operations of the Program

The operations of the program must be framed on an elastic basis; i.e., meter readers should not be asked to completely examine all parts of the metering equipment each month. On the contrary, our best results have been derived by requesting concerted attention to single matters on each visit. For example, in one month the readers check the condition of the meter seals or, in the event sealing is not employed, check the condition of the meter couplings. At a later time, they make a visual examination of the plug on idle service mains from which the meters have been removed. Incidentally, this latter operation is important because in many cases the idle gas main is located in a different section of the cellar from other service equipment such as the electric meter. On other visits the readers may be requested

to give attention to metered registration. It is considered feasible to restrict the program operations to the Fall and Winter periods.

Program Results

The Accounting Department employees operating on the schedule covered in this article are obtaining a high standard of most gratifying results which amply prove the value of the program. The consumer who for years covered his theft by the "Wait until I remove the dog from the cellar" story no longer possesses assurance of non-detection. To establish this point I briefly cite several cases that have been uncovered through investigation of meter readers' reports subsequent to the inauguration of the training program.

During one month the readers were requested to check all seals and report any seal irregularity. In one of many cases a meter reader reported that in a commercial establishment the meter seal was missing and, in addition, the seal was missing from an idle service main. An investigation by the Meter Irregularities Group developed evidence that gas was being diverted to heat the establishment and for commercial cooking. It was learned that the theft had been practiced over a period of years. Hence, the application of the meter reader's attention to a single point on the metering equipment resulted in the immediate stoppage of an excessive revenue loss.

In another case the meter reader reported that following a delayed admittance



to the electric meter he thought that he detected a slight odor of gas although the reading book indicated that there was no gas meter in the house. The gas service main was made unavailable for inspection by the reader by a locked partition in the cellar. An investigation developed that the idle service main had been tapped, and the tampering pipe was conducted throughout the various sections of the cellar under asbestos wrapping (to give the appearance of a steam fuel line) and supplied unregistered gas as house heating fuel. The burner in the furnace, which was connected to the tampering line, was merely a section of radiator. The revenue loss in this case was estimated to be \$1,000 per year, and it has been established that the theft was practiced in excess of five years.

The program offers other features worthy

(Continued on page 37)



Residential SECTION

E. J. BOYER, Chairman
B. A. SEIPLE, Vice-Chairman
J. W. WEST, JR., Secretary

Gas Range and Refrigerator Production Established Under O.P.M. Orders

THE following information on the future production of gas ranges and refrigerators is submitted in the belief that it will aid member gas companies in setting up their policies and plans regarding gas ranges and refrigerators during the coming months:

1. The release of the Office of Production Management quoted below covers an order of December 13, 1941, calling for an average cut of 35% in the use of steel and iron in the manufacture of a wide variety of stoves (including gas stoves) during the period of January 1 to April 30, 1942, as compared to the monthly average of iron and steel during the twelve months ended June 30, 1941. (See release for further details of this order.)

2. The manufacturer of gas refrigerators, Servel, Inc., has been authorized to produce refrigerators at a uniform monthly rate approximately equivalent to 50% of its 1941 production—this representing slightly less than the number of boxes produced in 1938. While this authorization was issued prior to the declaration of war, no changes have been ordered or indicated since that date. This authorization is subject to certain minor adjustments which may be made to exempt boxes used in defense housing projects, and for other special purposes.

As further information is received at Association Headquarters on production authorizations for gas appliances, member companies will be promptly advised.

OFFICE OF PRODUCTION MANAGEMENT RELEASE—PM 1801

Use of iron and steel in the manufacture of a wide variety of stoves, ranges and other domestic cooking appliances will be curtailed sharply beginning January 1 under an order issued by Donald M. Nelson, Director of Priorities.

The order calls for an average cut of 35 per cent during the period from January 1 to April 30 below the monthly average of iron and steel used in the 12 months ended June 30, 1941.

Curtailment is based on size of firms, so that many smaller manufacturers located in little southern towns where no defense work is obtainable will not be faced with too serious a labor displacement problem. The industry as a whole is not well adapted for conversion to defense work, lacking the equipment for precision work. The industry employs approximately 60,000 workers.

Cooking appliances covered by the order include all types of ranges, stoves, hot plates, combination ranges, camp and trailer stoves, and fuel oil conversion range burners, using gas, electricity, coal and wood, kerosene, fuel oil or gasoline, or any combination of coal and wood or fuel oil with gas or electricity.

Companies are classed according to the factory sales value of products manufactured during the base period. The following table shows the percentage cut for each class during the first quarter of 1942:

Class	Factory Sales Value	% Cut
A	\$3,000,000 or more	42
B	\$1,000,001 to \$3,000,000	36
C	\$1,000,000 or less	30

Government purchases of cooking appliances obtained on a competitive bidding basis for defense housing are excluded from the quota, as are lend-lease and certain other defense purchases.

Other important features of the order are:

1. Effective December 15, no manufacturer is permitted to use iron or steel to produce cover tops or lids to cover cooking

surfaces of cooking appliances equipped with tops or lids containing these materials.

2. Beginning February 1, no manufacturer can use any bright work, bright finish, metal finish or trim containing copper, nickel, chrome or aluminum in producing the appliances.

3. Inventories of raw materials, semi-processed materials or finished parts are restricted to minimum requirements.

4. Manufacturers cannot shift production between different fuel types, except by appeal to the Office of Production Management.

The order, which does not affect institutional and commercial cooking appliances and does not cover repair and replacement parts, was drafted by the Electrical Products and Consumers Durable Goods Branch of the Division of Civilian Supply after meetings with industry representatives and after consultation with interested government agencies.

In a letter accompanying the order, manufacturers were urged to reduce the number of models produced, concentrate on those making the most economical use of iron and steel, and adopt conservation measures such as substitution, redesign and respecification.

F. H. A. Promotes National "Repair for Defense" Program

TODAY the nation's defense program comes first, all other matters become secondary. Among the many problems now facing the country regarding the defense effort is that of providing adequate housing facilities for the thousands of workers and their families engaged in defense activities in all parts of the country.

While it is true that many new homes are being constructed under our defense housing program, it is now becoming evident that a serious housing shortage in defense areas is an actual reality and that some means must be found to supplement this new home construction.

Realizing that in many cities, towns and communities adjacent to or in the vicinity of defense areas there are many thousands of well located and well constructed old homes both single and multi-family which can be readily converted and repaired to accommodate additional occupants the Fed-

eral Housing Administration is undertaking a nationwide "Repair for Defense" program especially designed to accomplish the following:

1. Encourage property owners to repair and rehabilitate properties and particularly to convert old homes into multiple family dwellings.
2. To conserve vital and strategic materials.
3. To avoid much hasty new construction which might be of doubtful value after the emergency.
4. To protect against deterioration of the nation's 80 billion dollar investment in homes.
5. To save valuable time in furthering the defense effort.
6. To give first place in the field of consumer credit to worthwhile and lasting property improvements rather than non-essentials and to make property owners aware that repairs and improvements can

be paid for out of income on a practical and sensible basis.

That a large market exists in this field for the gas industry in supplying service through appliances is self-evident. Many of these houses and buildings which are now vacant or are occupied only by one family are already piped for gas service and will, upon their conversion and repair, require additional service and appliances.

Two important factors regarding the new program should be of material assistance in its progress. First: the owner of the property who borrows the money for the purpose of repairing or converting an existing home or building in defense areas is exempt from the restrictions of Regulation "W" of the Federal Reserve Board relating to credit restrictions. Second: the builder or contractor who is engaged to do the actual work receives priorities on all critical materials. Full information and details regarding the defining of boundaries of defense areas are available from your local F.H.A. offices. Following is a résumé of Title I loans.

For dwellings of more than 1 family—\$5,000 maximum loan—5 years maximum repayment period—Annual Cost of loan—\$4 per \$100 (if over \$2,500).

For single family homes or business properties—\$2,500 minimum loan—3 years max-

imum repayment period. Annual Cost of loan, \$3 per \$100.

Applications for these loans may be made by the property owner at any bank or lending institution approved by F.H.A. and after the loan is granted the following methods may be utilized:

- A. The borrower may receive the cash and pay the dealer or contractor himself.
- B. The borrower may authorize the financial institution to pay the dealer or contractor.
- C. The borrower may have the proceeds paid jointly to himself and the dealer or contractor.
- D. The borrower may make the note payable directly to the dealer or contractor who after the work is completed sells the note to a qualified lending institution.

The various forms used in these transactions are available to all lending institutions now engaged in making F.H.A. loans.

Bearing in mind the fact that many gas companies may want to cooperate with the program, the Residential Section of the American Gas Association will forward in the near future complete information and samples of the booklets and other material which are available to gas companies and their local dealers from the F.H.A.

but each contestant received a gift of a measuring cup and measuring spoons.

Two newspaper advertisements and two news releases preceded the contest. Many of the home service consultants visited the schools and announced the contest to the home economics classes. Girl Scout leaders and heads of organizations were also notified. Clever announcements were mailed to girls within the age limit.

Immediately after each contest a news release giving the prize winners (address and age) and the judges was sent to the local papers. Many newspapers sent their photographer and reporters to get human interest stories and photographs of the young cooks.

Arrays of many kinds of cookies were on display at the various Public Service offices and a free recipe book "Gifts to Make In Your Kitchen" was distributed. This book of tested recipes was assembled by Public Service and is very popular.

Eastern Sales Managers to Meet in Pittsburgh

AT the recent meeting of the Eastern Natural Gas Regional Sales Council held in Pittsburgh under the direction of F. B. Jones, general sales manager, Equitable Gas Company, chairman, it was decided that a Sales Managers' Round Table Discussion would be held on February 17 and 18 at Pittsburgh, Pa.

It was thought by the council that a meeting of this type, affording the sales executives of natural gas companies in this area the opportunity of presenting and discussing the problems which have arisen during the emergency would be especially helpful under present conditions.

Among the problems to be discussed are those of advertising, customer relations, sales personnel and other pertinent topics and their relation to current emergencies.

Building Information Being Distributed

MUCH confusion regarding both residential and commercial building has arisen due to current problems such as priorities and others, resulting from national defense and the current emergency period. In an effort to keep the building industry and other industries who are definitely interested in this field abreast of the rapidly changing conditions regarding housing, the *Architectural Forum*, affiliated with Time Inc., has inaugurated the "Washington Building Letter," which will be printed weekly to report the latest developments in this field as they occur.

Realizing the importance of this market to the gas industry, the Residential Section has secured copies of the first two Letters printed which are being sent to all gas companies for their information and with the possibility that they may desire to arrange to secure future issues.

Cookie Festival for School Children Stirs Holiday Interest

A Cookie Festival was held during December in twenty-five Commercial offices of Public Service Electric and Gas Company, (N. J.) in territory served with gas by the company. The festival, conducted by the Home Economics Departments, was opened with a Christmas Cookie Baking Contest for school girls between the ages of 10 and 16.

There were more than 3500 entries in the contests throughout the territory. Cookies were entered in four classifications—roll, pressed, drop and refrigerator cookies. There were judges on texture, taste and appearance, and winners received appropriate prizes.

Most offices had only three women to

judge their contest. These were usually a home economics teacher, a club woman with an interest in food, and the editor of the woman's page of the local newspaper.

Lessons were given to the girls prior to the contest. Home service consultants demonstrated the mixing, baking, and decorating of the various cakes and then supervised the young cooks as they baked and planned for the contest. Each girl registering for the contest was eligible for one baking lesson. She was also given a free recipe sheet for making cookies.

Much enthusiasm was manifested in the contest and many of the cakes were decorated in elaborate and original designs. The cookies were not returned after the contest



Winners and other participants in the Christmas Cookie Baking Contest for school girls. More than 3500 girls took part in this competition.

Chicago Gets Mid-West Sales Conference

FOLLOWING last year's conference which many agree was one of the best ever held, the 1942 Mid-West Regional Gas Sales Conference will take place at the Edgewater Beach Hotel, Chicago, February 23-24. This decision was reached at a recent meeting of the Mid-West Regional Gas Sales Council under the direction of J. C. Sackman, chairman, at which time a program especially designed to meet the problems of emergency conditions was planned. In addition to well known executives of other industries, the conference will feature a series of industry talks and presentations in keeping with the times.

Refrigeration Committee Perfects 1942 Plans



C. V. Sorenson

The committee discussed the outlook for production during the months of January, February and March, which is the second quarter of the current campaign. It was stated at the meeting that Servel, Inc., had been authorized to produce refrigerators at a uniform monthly rate approximately equivalent to 50% of its 1941 production, this being slightly less than 1938 volume. This statement is, of course, subject to adjustments which may be caused by actual war time operation which became an established fact after the committee meeting.

It was felt that there would be a tightening of sales during the first quarter of 1942 as compared to the corresponding period of 1941. The committee devoted considerable time in discussing the question of sales personnel morale and its effect on sales and decided that this item should be given special attention during 1942.

It was reported that 469 companies representing 10,351,000 meters and 3,015 salesmen were registered which is an increase in the number of companies involved. There was much discussion regarding the recommendations of the 1941-42 Best Performance awards and a number of suggestions were reviewed.

It was decided that the Trip Awards should be continued for high salesmen and representatives of companies winning Best Performance Awards that the number of

such trips for high salesmen should be increased.

It is also planned that a list of sales made by each salesman in each division for the preceding month should be sent to each registered company for the purpose of further stimulating sales efforts during the ensuing months.

The January, February, March Campaign portfolio will be mailed to the industry about January 1.

Ohio CP Sales Soar

BACKED by an intelligent and aggressive CP range promotional program featured by bonuses and inter-district contests, the men on the sales firing line of The Ohio Fuel Gas Company have compiled impressive CP range sales records.

With keen and spirited competition among the individual salesmen and the company sales districts, CP sales for 1941 have been steadily increasing as indicated by the rise in the percentage of CP sales to total range sales from 39.9% for July, 1941, to 45.1%, 61.5% and 70.7% for the months of August, September and October, respectively. The percentage average was 54.3% for the 4-month period.

Further proof of this company's splendid CP sales achievements is evidenced by the fact that during the period of from January 11 to November 8, 1941, a total of 4,407 gas ranges were sold of which 1,845 or 41.9% were CP Ranges—truly a remarkable record!

As of December 15, a total of 14 salesmen have qualified as members of the 1941 CP Ranger Club and it is expected that the number will be increased by the end of the year.

Minimum Service Charge Made in New York

BEGINNING January 1, 1942, the Consolidated Edison Co. of New York, Inc., will make a minimum charge of \$1.50 for responding to customer calls for servicing or repair to other than company-owned gas equipment. If the work performed requires more than one-half hour of the serviceman's time, the charge for this additional time will be at the rate of \$1.00 for each half-hour or fraction thereof.

As an alternative to this basis of charge, Consolidated Edison customers may contract on an annual basis for labor service to gas refrigerators and gas ranges for adjustments and installation of parts supplied by the customer. Replacement parts or other materials required will be sold by the company, as available, for the use of its customers at listed prices.

Customers with automatic space heating installations which supply the total space heating requirements will continue to have their gas heating and gas water heating equipment serviced without charge, until further notice, it was stated.

A. G. A. To Take Part in Heating Show



F. H. Trembley, Jr.

Following its established custom of the past several years, the Residential Section in cooperation with The Philadelphia Gas Works Company, The Philadelphia Electric Company and 21 representative gas equipment manufacturers will have an attractive exhibit at the Heating & Ventilating Exposition to be held in Commercial Museum at Philadelphia, Pa., January 26-30.

This exposition, which is held every two years, is the foremost of its kind and attracts thousands of builders, contractors, engineers, building owners and others from all parts of the country.

The exhibit will be located in a prominent part of the vast auditorium and will feature a unified display of the most modern gas winter and summer air conditioning equipment and accessories. It will occupy an area of 1,100 sq.ft. Frank H. Trembley, Jr., The Philadelphia Gas Works Company, is the chairman of the committee in charge of the cooperative exhibit.

Gas Industry Cooperating in Nutrition Program

FULL-FLEDGED support of the government's nutrition program has been pledged by the American Gas Association on behalf of the gas industry and steps are being taken for active cooperation in this program. With gas supplying the fuel that cooks the food for 90,000,000 American citizens, it is felt that the industry can contribute materially to the defense program by assisting with the nutrition program.

A special committee of the Association is being created to consider the various ways and means of assistance to local, state, and national committees promoting food conservation and better health, and in the near future will forward specific suggestions wherein every gas company can be of the maximum assistance to the program.

In the meanwhile it is suggested that, through home service departments and in other appropriate ways, gas company officials consult all local, state, or regional organizations promoting the nutrition program and offer any facilities to them which may contribute to the success of the activity.

It is believed that the organized facilities for serving customers in each local community represented by local gas companies can be utilized by food and nutrition committees for achieving the objectives of food conservation and improved health through better diets, both of which are necessary for the defense of our country.



Industrial Committees at Work on 1942 Program

METALS COMMITTEE STUDYING GAS IN DEFENSE PLANTS



Robert C. Le May

REALIZING the broad scope and importance of the metals industries for production in our defense program, the A. G. A. Industrial and Commercial Gas Section's Metal Treating and Melting Committee has drafted a comprehensive 1942 work-plan. Robert C. Le May, The Connecticut Light & Power Co., Waterbury, is the chairman under whose leadership the committee has launched its 1942 program. Mr. LeMay's co-workers are: John P. Brosius, Equitable Gas Co., Pittsburgh; Hale A. Clark, Michigan Consolidated Gas Co., Detroit; Elmer C. Cook, American Gas Furnace Co., Elizabeth, N. J.; Clayton S. Cronkright, Public Service Electric & Gas Co., Newark, N. J.; Joseph H. Gumz, Pacific Gas & Electric Co., San Francisco; Frederic O. Hess, The Selas Co., Philadelphia; John Huston, The Bridgeport Gas Light Co., Bridgeport, Conn.; Charles B. Kentnor, Jr., W. S. Rockwell Co., New York; Frederick W. Marklin, Philadelphia Electric Co., Philadelphia; Gerald C. Marrs, Consumers Gas Co., Reading, Pa.; Oliver Pritchard, The Brooklyn Union Gas Co., Brooklyn; Henry Robinson, American Brass Co., Waterbury, Conn.; S. Proctor Rodgers, Consolidated Gas Electric Light & Power Co. of Baltimore; C. George Segeler, American Gas Association, New York; Philip T. Stroup, Aluminum Co. of America, New Kensington, Pa.; and Eugene D. Milener, American Gas Association, secretary.

Three major national defense projects have been decided upon. These have been put in charge, respectively, of S. Proctor Rodgers, Oliver Pritchard, and Clayton S. Cronkright. A small group of men near Mr. Le May is acting as a working and coordinating group.

Project One, under Mr. Rodgers, is a study of the effect of city gas atmospheres in non-ferrous heat-treating with particular emphasis on aluminum and its alloys.

Some confusion exists as to the exact status of gas in the aluminum alloy heat-treating field and the committee hopes to clarify this picture. To accomplish this objective the group will proceed as follows:

- A. Study the aluminum and aluminum alloy heat-treating specifications as set up by the Navy, Army, Society of Automotive Engineers, American Society for Metals, the metal producers and other influential agencies. From this determine which alloys may be heat-treated in combusted gas atmospheres and then turn attention to those for which gas has been thus far ruled out.
- B. Attempt to gain acceptance of combusted gas atmospheres for the heat-treating of additional aluminum alloys by:
 - a) An effort to reconcile any conflicting specifications.
 - b) Investigation of applications where gas is now being successfully used in contradiction to existing specifications.
 - c) Review recently published material on the subject to determine how it may influence or interpret the specifications.
 - d) A study to determine whether we can expect to gain approval for their use in the heat treatment of those aluminum alloys which neither specifications nor practice has shown may be so treated. If the committee feels that there are such alloys, it will take whatever action is within its power to prove these convictions.
- C. Determine what gas-heated equipment may be used to heat treat successfully those alloys for which combusted gas atmospheres cannot be used.

Treating Metals for War Use

The plans above concern only the heat treatment of aluminum and its alloys. During the year we also hope to be able to pursue projects involving the application of gas atmospheres in the heat treatment of other metals that are used for war production.

Mr. Pritchard's group is undertaking further research in brass and aluminum melting with particular emphasis on the purification of metal. An effort will also be made to gain greater acceptance of gas melting by the widespread publication of pertinent material.

Fortunately, the members of the subcommittee for this project are so located that they will be able to coordinate the work and extend the plans for the project. In addition, there are other groups working on parallel projects, and during the year there will be an interchange of information. Specific tasks of the subcommittee will include:

- A. A review of most of the recent and authoritative information covering the effect of melting conditions on metal quality.
- B. A study of outstanding installations to learn what quality of metal is being obtained under what we have considered good practice.
- C. With the above information an attempt to learn:
 - a) What quality of metal can be obtained without the addition of special chemical agents.
 - b) For what uses this untreated metal is acceptable.
 - c) What applications require metal with higher "physicals."
- D. An investigation of the use of chemicals which are added to the melt for deoxidation or degassing. This will be done both in foundries, and in casting shops.
- E. Continuation of the program of assisting the manufacturers of gas-fired melting equipment in adopting improved combustion systems, refractories and furnace design.
- F. An attempt to gain more widespread publication of the story of gas melting, with an effort to reach the foundrymen directly through their own association and trade journals.

Under Mr. Cronkright, the committee is developing ways and means to encourage the purchase of present emergency equipment of a type and character that will satisfactorily fill the war needs of manufacturers and after the emergency is over be a credit to industrial gas during peacetime operation.

Because many industrial gas men have already seen some inferior heat-treating equipment being installed on their lines since the beginning of the defense program, the committee will attempt in its third project to see what can be done to minimize the amount of trouble which these inefficient or otherwise unsatisfactory units will cause when their owners again begin to feel that operating economy is a primary consideration. It is unfortunate that quality standards are in some cases lowered at a time like this, but to combat the resultant ill effect of these instances, the committee is taking action:

- A. To obtain the following information:
 - a) In what industries, in what locations and under what conditions is unsatisfactory equipment most likely to appear?

- b) What features of this equipment are usually the ones which will make it unsatisfactory after the war is over?
- B. To publish the results of this investigation in such a form that the industrial gas men and their customers will be better prepared to combat this situation, and thus protect their interests.
- C. To seek the cooperation of equipment manufacturers whose interests are also served by the maintenance of strict quality standards.

INDUSTRIAL SPACE HEATING COMMITTEE FEATURES UNIT HEATERS



James E. Dare

Convinced of the importance and permanence of the industrial space heating load, the newly organized Committee on Industrial Space Heating is undertaking an extensive, forward-looking 1942 program. An analysis of present and future markets for, and desirability of,

this load is the major theme.

James E. Dare, Public Service Co. of Northern Illinois, Streator, Ill., is chairman. Fellow-workers are: George L. Ballard, Panhandle Eastern Pipeline Co., Springfield, Ill.; Robin A. Bell, Surface Combustion Corp., New York; Walter N. Blinks, General Gas Light Co., Kalamazoo, Mich.; Charles F. Cushing, The Bryant Heater Co., Cleveland, Ohio; Sheldon B. Lee, National Utility Co. of Michigan, Benton Harbor; Robert H. Lind, Peoples Gas Light Co., Davenport, Iowa; E. H. Ronsick, The St. Louis County Gas Co., Webster Groves, Mo., and Eugene D. Milener, American Gas Association, secretary.

At its first meeting the committee outlined the following major objectives, and assigned two men to study each: Analysis of the Market for Industrial Space Heating—Messrs. Blinks and Lee; Study of Competitive Conditions That Affect Sales—Messrs. Ronsick and Lind; Analysis of Various Industrial Gas Space Heating Equipment (air heating type only)—Messrs. Bell and Ballard; Sizing Equipment and Estimating Gas Consumption—Messrs. Lee and Blinks.

As a background for analysis of this gas load, both present and future, the committee is making a study of competitive conditions that affect sales. They will tabulate data on fuel and equipment-installation cost comparisons, with practical examples cited.

The merits of gas-fired unit heaters versus competitive applications will also be studied. Feeling that a thorough investigation of a particular type is most effective, Chairman Dare's group has selected the unit heater for classification. Recommendations will be made concerning the proper application of the various models and also in regard to correct installation methods.

Equipment sizing and gas consumption estimates are also being considered. Stress is being placed on proper calculation methods for infiltration-losses, heat gained due to industrial processing, heat appliances, and actual consumption figures as compared to pre-installation figures. Conclusions reached as a result of these discussions will be presented to the industry, probably during the A. G. A. Industrial and Commercial Gas Sales Conference, Pittsburgh, March 12 and 13.

It is our aim to bring to members of the

Section and to other readers of the MONTHLY a picture of the work of our individual committees in relation to the activities of the Section, the Association, the industry. Every committee is directing its work toward one objective—to attain the maximum efficiency of industrial and commercial gas in the war effort. The two we have chosen to present this month are indicative of the 1942 work-schedules of our committees as a whole. The committee chairmen welcome your suggestions and comments.

Specialized Gas Equipment Shown at Chemical Exposition

AT the eighteenth National Exposition of Chemical Industries, held in Grand Central Palace, New York, December 1-6, a number of manufacturer members of the American Gas Association took excellent advantage of an opportunity to present their products to a large industrial group. Among these were: The Selas Company; Eclipse Fuel Engineering Co.; American Meter Co.; Pittsburgh Equitable Meter Co.; and Koppers Company.

New developments in the chemical requirements of defense, as well as products and processes used in civilian pursuits were viewed by more than 50,000 engineers, technicians, production men and purchasing agents. This mass of apparatus was displayed by 335 individual manufacturers.

In full operation was the eye-catching green-and-white booth of The Selas Company, Philadelphia, Pa., manufacturers and designers of gas-fired precision equipment for the process industries. In addition to the standard Selas ribbon burners, P-R burners and crucible furnaces, interesting new applications of gas to specialized equipment for the process industries were on display.

On view was an all-ceramic durariant burner for both low- and high-temperature

industrial furnace applications. It has been found that the all-ceramic burner construction used in place of the now virtually unavailable hi-temperature alloy gives longer life under heat.

Another realization that the nation's chemical industry is coming to be one of the gas industry's big customers was seen in the booth of Eclipse Fuel Engineering Co., Rockford, Ill. On display was a 210,000 B.t.u. gas-fired Dowtherm vaporizer (boiler). This unit is like an ordinary gas-fired steam boiler but of much heavier and specialized construction. Processing temperatures from steam boilers being limited by steam pressures, boilers using Dowtherm instead of steam enable high operating temperatures to be attained with comparatively low boiler pressures.

Advances made in dehumidification for industrial processes were dramatized by the display of a large Pittsburgh Lectrodryer which dominated the booth of Aluminum Co. of America.

Plastics took an increasingly important part in the chemical exposition this year, and gas is one of the basic raw materials used in their manufacture. Merco Nordstrom Valve Co., a subsidiary of Pittsburgh Equitable Meter Co., showed their well-



Display of Selas products at the National Chemical Exposition. Industrial gas burners, made of ceramic, were featured.

known line of lubricated plug valves. Blaw Knox and Koppers Co., leading manufacturers of gas plants and gas plant equipment had colorful displays. Wheleco Instruments Co., Inc., Chicago, displayed indicating, controlling and portable thermometers; indicating, recording and controlling potentiometers, pyrometers; and flameotrols.

American Meter Co., New York., displayed gas meters and pressure regulators.

Fisher & Porter Co., manufacturers of the Rotameter for measuring the flow rate of any kind of gas, were also present with an exhibit. PerfeKtum Products displayed a gas-fired tube-sealing machine for pharmaceutical use. Barnstead Still & Sterilizer Co. showed gas-fired stills. Baker Perkins, Inc., S. Blickman, Inc., and Baker & Co., Inc., were other manufacturers of gas-fired equipment who had space at the exposition.

time, Mr. Novak rigged up an endless belt across the front of the stage. At breakneck speed the cooked food was placed on serving platters as they roared off the production line.

Convention Speakers Featured

W. Frank Roberts, president, Standard Gas Equipment Corporation, addressed the convention in his dual capacity as an executive in the gas equipment industry and as OPM administrator for the State of Maryland. Also, talks were given by Eugene D. Milener, American Gas Association, New York; J. F. Pitman of J. C. Pitman & Sons, Inc., Lynn, Mass.; and W. L. Webster, Savory Appliance, Inc., Newark.

Gas industry participation was arranged under the direction of Leon Ourusoff of the Washington Gas Light Co.

Cooperating gas food service equipment manufacturers were: Detroit Michigan Stove Co.; Standard Gas Equipment Corporation; American Stove Co.; Servel, Inc.; G. S. Blodgett Co., Inc., Masterchef Products, Inc., Savory Appliances, Inc.; and Majestic Manufacturing Co.

Gas Men Active at Southeastern Restaurant Convention

GAS men were one of the most active groups at the annual Southeastern Regional Restaurant Convention and Exposition, which was held at the Mayflower Hotel, Washington, D. C., December 1-3. Gas service and gas equipment were featured by means of a three-gun barrage consisting of a large display of gas food service equipment, an unusual stage demonstration, and talks by representatives of our industry. Representatives from 28 states, totaling several thousand, were in attendance.

Under the joint sponsorship of the Washington Gas Light Company and leading equipment manufacturers, a large space in the main lobby of the Mayflower was equipped with heavy-duty broilers, ranges, deep fat fryers, toasters, grilles and bake ovens, and a gas year-round air conditioner. With an attractive and colorful background, and with ingenious spotlights, the appliances in this display received continuous attention from the many restaurant, tea



Chef Frank Novak dramatizes quality, appearance and speed of large-capacity cooking with gas to an audience of 750, while Peggy Dugas sings.

room and other food service operators in attendance.

A unique attention-getter was an arrangement somewhat like a telephone booth in the center of the gas display. Presiding over the booth was Miss Mary Nielsen, who asked visitors to speak into a microphone and record their suggestions for bettering gas service and gas appliances. Before the close of the convention, a prize was given for those suggestions which a jury deemed to be most valuable.

Stage Demonstration Scores

At the Tuesday night session, what was perhaps one of the largest capacity demonstrations ever put on the stage at a restaurant convention, was sponsored by Standard Gas Equipment Corporation and Washington Gas Light Co. A large bake oven, two heavy-duty ranges, a heavy-duty broiler and two large deep fat fryers were in full blast. The demonstration was presided over by Frank Novak, noted restaurant operator of Cape Cod, Mass. With the assistance of a crew of snappily-uniformed colored cooks, and with pretty Peggy Dugas rendering songs, Mr. Novak supervised the preparation of an elaborate banquet. Quality, appearance and speed were his keynotes. Interest was sustained by means of several stunts. Among them was Mr. Novak's carving of a swan from a cake of ice located close to the ranges and bake oven, thus emphasizing the high efficiency of the insulation. To dramatize the speed of cooking vast quantities of food for service at one

Industrial Gas Sales Conference in March

GEORGE F. B. OWENS, Chairman of the Industrial and Commercial Gas Section, has announced that the two annual sales conferences will be combined into one 1942 meeting. The Industrial and Commercial Gas Sales Conference will be held at the William Penn Hotel, Pittsburgh, Thursday and Friday, March 12 and 13.

A local committee, composed of C. B. Mershon, The Manufacturers Light & Heat Co., chairman; F. B. Jones, Equitable Gas Co.; Irving D. Ross, The Peoples Natural Gas Co., all of Pittsburgh, and W. L. Sarver, T. W. Phillips Gas & Oil Co., Butler, Pa., with the help of other gas men and equipment manufacturers is planning a program of value to all industrial and commercial gas men. Ways of making industrial and commercial gas more effective in production of war materials and in servicing camps, bases, cantonments, etc. will be the theme of the conference.

Parade of Munitions Treated with Gas

VIIDLY emphasized from the gas industry outlook in an attractive 12-page booklet entitled "The Great American Emergency," published by Surface Combustion Corporation, are extensive and versatile applications of industrial gas to the production of national defense weapons of all description.

Photographs, color and typography effectively dramatize the parade of munitions being heat-treated with gas for industry's vital needs during the great emergency. They portray the essential differences between today's defense heat-treating and the application of our furnaces to tomorrow's peace-time needs. Armor plate, aeroplane parts, shells, cartridge cases, bombs, gun barrels and mounts, the numerous parts used in tractors, tanks, trucks—in fact, every metallic part used for defense equipment that requires heat-treating with gas is covered in the booklet.

This new booklet, which should be particularly interesting to gas industry executives, may be obtained from Surface Combustion Corporation, Box 907, M. O., Toledo, Ohio.

Brennan Joins Warren

G. L. BRENNAN has been appointed manager of the liquefied petroleum gas division of Warren Petroleum Corp., according to H. E. Felt, vice-president of that company. Mr. Brennan has been associated with the Phillips Petroleum Company for nearly 13 years, resigning as assistant manager of the special products department to accept his new position.

Going Ahead WITH INDUSTRIAL GAS

TO MEMBERS OF THE INDUSTRIAL AND COMMERCIAL GAS SECTION:

WAR has placed a responsibility on industrial gas overshadowing every other task it has ever faced. The quantities of munitions and war supplies of every kind to be produced in the next few years are staggering. Existing plants that have already been enlarged will be further expanded. New factories, both large and small, will be built to add their productive power to the many new factories that have been built during the initial period of the national defense program.

Industrial gas men will be called on to handle many important business transactions and engineering matters arising from this vast expansion of the nation's production facilities. You will be in close contact with all the older and well-established manufacturing processes, but on a vastly enlarged scale. You will become involved in many of the newer production processes, particularly those that have been created to speed factory outputs to the limit. Wherever heat is used in industry you will be playing an important part in the effort to bring victory to our armed forces as soon as possible.

That industrial gas men are well prepared for this enlarged task, I am fully convinced. The personnel of most industrial gas departments is well trained, experienced, and has the confidence of the industrial leaders

of their communities. You have intimate knowledge of the workings in plants served with industrial gas. You have the ability to interpret industrial gas service in terms of the process heating requirements of your customers so that maximum production of war equipment is assured.

Manufacturers of industrial gas equipment, who are already operating on a war footing, face the task of still further increasing their output of furnaces, ovens, burners and all kinds of special gas burning equipment needed by war factories in their efforts to increase production. Let it be said to the credit of the gas industry, and particularly of the equipment manufacturers, that industrial gas apparatus of every kind is meeting the severe requirements of our speeded-up industrial machine. By far the greatest quantity of equipment being installed is of the types that have been designed and thoroughly tested out in practice before the emergency arose. On the other hand, new and special designs are being produced, where needed, at a rate never before attained.

The Industrial and Commercial Gas Section will devote all of its activities to facilitating and improving the use of gas for production of war materials. All other considerations are, for the time, put to one side. The Managing Committee and every other committee of the Section has geared its work to that end. The Industrial Sales Conference will be arranged so that the maximum amount of material for immediate use in industrial plants can be secured by those in attendance. The officers of the Section and Headquarters staff will assist members wherever possible and will expedite the handling of all inquiries. The extensive data files are open to all.

I urge you to call upon the Industrial and Commercial Gas Section for help in solution of any problems with which you are now confronted.



George F. B. Owens
Chairman, Ind. & Com. Gas Section

INDUSTRIAL AND COMMERCIAL NATIONAL GAS ADVERTISING FOR JANUARY

The National Advertising Committee of the Industrial and Commercial Gas Section, J. P. Leinroth, chairman, and F. B. Jones, vice-chairman, announces that full-page advertisements will appear in the trade and business magazines listed below during the month of January. These advertisements, which will appear in 16 publications reaching a total audience of 288,587, are prepared in cooperation with the Committee on National Advertising as a part of the Association's national advertising campaign.

General Manufacturing

BUSINESS WEEK (Jan. 31)—The reason we can help you today? We got ready *yesterday*. (Defense—and Engineering Research in developing modern Gas Equipment.)

Baking Industry

BAKERS' HELPER (Jan. 17)—I *must* have precision—with GAS alone we have close control, speed, clean heat, and economy.

Ceramic Industry

CERAMIC INDUSTRY—Universal's two potteries use GAS exclusively—Universal Potteries, Incorporated, Cambridge, Ohio.

Hospital Field

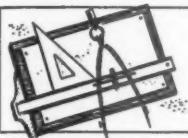
MODERN HOSPITAL—How important really is cooking in a Hospital? . . . Modern GAS equipment . . . a step toward better public relations.

Metals Industry

*THE IRON AGE (Jan. 1)—Open flame annealing with GAS brings new flexibility, speed and economy for Syncro Machine Company, Rahway, N. J.
*STEEL (Jan. 5)
METALS & ALLOYS
INDUSTRIAL HEATING
HEAT TREATING AND
FORGING
* (Annual Yearbook)

Hotel and Restaurant Field

AMERICAN RESTAURANT—In Miami Beach's 200 Hotels and 250 Restaurants GAS cooking is king!
CHAIN STORE AGE (Fountain and Restaurant Section)—GAS exclusively in G. C. Murphy Co.'s, Indianapolis store.



Technical SECTION

HAROLD L. GAIDRY, Chairman
J. H. WOLFE, Vice-Chairman
A. GORDON KING, Secretary

The Use of Anthracite in Heavy Oil Water-Gas Operation at Pottsville*

Introduction

THE rapid expansion of industrial activities to meet the demand for adequate national defense is causing a general coke shortage, while the transfer of a large number of tankers from normal to war service is threatening a serious shortage of oil along the Eastern Seaboard. Since the majority of the American water-gas plants are located along the Eastern Seaboard and are using coke and heavy oil as the gas making materials, these shortages are already being felt by the industry.

Anthracite, being the densest and most concentrated form of commercial carbon, was for many years considered a premium fuel for generator purposes by the water-gas industry. Its high bulk density permits maximum heat storage in the generator during the blow with resulting increase in gas-making capacity during the run, while its freedom from tar-forming constituents, low sulphur content, and high reactivity are further advantages in purification and operation.

The use of anthracite as generator fuel dates back to 1872, and the steady rise of water-gas production during the latter part of the 19th and early part of the 20th centuries is reflected in the increased use of anthracite for this purpose until about 1919 when a peak of well over one million tons of the generator sizes (grate, broken, and egg) found a ready market in the manufactured gas industry. Subsequent to 1920, however, the use of anthracite tapered off slowly until the prolonged strikes of 1922 and 1925-26 when anthracite was very largely displaced from this market by coke and bituminous coal.

Meanwhile, the technology of gasoline refining had reached a stage in its development where more and more of the gas oil previously available for carburetion was being converted into gasoline, forcing the manufacturer of water gas to turn to the use of heavy fuel oil. Means for the use of heavy fuel oil were, therefore, developed at a time when most of the water-gas plants had already begun to use coke, and very few of the operators have had the opportunity

By L. L. NEWMAN¹ and C. C. WRIGHT²

nity to become familiar with the use of anthracite in conjunction with heavy-oil operation. Moreover, the low price of heavy fuel oil in relation to coke has made it desirable to conduct water-gas operations in such a manner that oil consumption is increased at the expense of the solid fuel. This is largely accomplished by reforming and by the use of the blow run. With this practice modern high-speed water-gas machines become in reality oil-gas machines in which the coke in the generator functions to a large extent in the same manner as do checkerbricks in an oil-gas generator.

While it is unthinkable that any gas works will actually be deprived of its oil requirements during the threatened shortage, it is readily conceivable that because of the more expensive methods of substitute transportation the cost of oil may rise, forcing water-gas plant operators to substitute solid fuel for a portion of the oil now used. This would further increase the demand for solid fuel, but because of the coke shortage, anthracite or bituminous coal will have to be used. Strategically located with respect to the carbureted water-gas industry—over 80 per cent of America's water-gas production is within a 300-mile radius of the heart of the anthracite region—anthracite appears to be the logical choice for most plants. Some plants have already resumed the use of anthracite, and it is anticipated that a great many more will do likewise, but with heavy oil instead of gas oil for carburetion. Because of the possible price relations between anthracite and heavy oil the use of the blow run and reforming may have to be kept at a minimum. It is believed, therefore, that presentation of operating methods and results obtained at the Pottsville, Pennsylvania, water-gas plant using anthracite and heavy oil with a minimum of reforming, or none at all, is especially appropriate at this time.

Description of the Plant

The Pottsville gas plant consists of a main building in which are housed two water-gas machines, two steam boilers, two turbo blowers, the primary cooler, exhausters, P & A tar extractor, a booster, tar, oil, and water pumps, and a general repair shop. A coal storage shed, divided into two parts, one for the generator fuel and the

other for boiler fuel is located adjacent to the boiler room. One auxiliary building houses the station meter, the meter repair and test shop and the distribution equipment stores. There are a separate governor house and a small pump house. Located outdoors are the relief holder, a secondary cooler, gas purifiers, two storage holders, a separator, two sumps, three oil tanks, a demulsifier, and one tar storage tank. A railroad siding runs close to the oil tanks and the coal shed.

One water-gas machine is required to produce the gas requirements of the plant and the other is used for standby. The machine in regular use is a 6' x 6' x 5' U.G.I. set with a grate area of 12.57 square feet, which, in 1939, was converted to backrun and heavy-oil operation. This machine is equipped with an oil spray in the top of the generator for the admission of oil on top of the fuel bed. An angle connection and dust leg with a tangential inlet for carburetor air connects the generator to the carburetor. The carburetor has a single Semet-Solvay ignition arch in line with the inlet from the angle connection. Two oil sprays, located 180° apart below the ignition arch, are used for the admission of oil into the carburetor. Openings are provided at the base for the admission of scurving air to consume a portion of the carbon from the heavy oil. There are no checkerbricks in the carburetor, but the superheater is checkerred with standard 9" x 4 1/2" x 2 1/2" checkerbricks. These had been in use over 2,100 hours on the date the observations were begun.

The steam valves and generator and carburetor blast and scurving valves are hand operated, while the oil valves, the three-way backrun valve, and the stack valve are manually controlled and hydraulically operated.

Gas Flow—The water gas, after it leaves the wash box, flows through the primary cooler into the relief holder; from the relief holder it is drawn through the secondary cooler by an exhauster which pumps it through the tar extractor, the purifiers and the Connerville rotary displacement meter to the main storage holder.

Coal Handling—Coal is delivered to the coal shed in trucks. It is shoveled from the edge of the pile with ordinary coal shovels into bottom door conical dump buggies used for charging the coal into the generator. Forks are used for loading the bug-

* The complete report is available in printed form in Mineral Industries Experiment Station Bulletin 32 which may be secured from The Pennsylvania State College for 50¢ a copy.

¹ Assistant Professor of Fuel Technology, The Pennsylvania State College, State College, Pa.

² Associate Professor of Fuel Technology, The Pennsylvania State College, State College, Pa.

gies only when approaching the bottom of the coal pile for the purpose of screening out the finer sizes of coal. After the coal is weighed it is brought up by means of a hydraulic elevator to the operating floor where it is charged into the generator. There is little size degradation due to handling.

Oil Handling—Oil is received in tank cars and is pumped into the storage tanks. Heaters maintain a temperature of approximately 110° F. in the tanks. The oil is drawn from the tanks by a pump and delivered to a heater which raises the oil temperature to approximately 250° F. From the heater the oil flows through a meter to the sprays in the carburetor and the generator.

Miscellaneous—The air is supplied to the generator, carburetor, and scurfing jets with a Sturtevant No. 6, Des. 4 blower driven by

F-6 steam turbine, 40 horse power, 3110 R.P.M. at 100 pounds steam pressure.

Steam is controlled by a main steam valve, and supplied to a tee from which the uprun steam flows to a spreader in the base of the generator, and the backrun steam to the superheater offtake ahead of the three-way valve.

Water and tar emulsion from the wash box, and condensate from the primary cooler, exhaustor, and P & A tar extractor flow to the separator. The clean water from the separator overflows into one sump from which it is recirculated to the wash box. The condensate from the secondary cooler flows directly to a second sump. Excess clear water from the sumps flows to a nearby creek, while the emulsion is pumped either directly to the de-emulsifier or to the base of the relief holder where it is stored for de-emulsification later.

Operating Routine

The gas sendout in Pottsville is such that one 8-hour shift is usually sufficient for the operation and cleaning of the water-gas machine. In order to maintain a constant pressure at the holder outlet the main storage holder is never permitted to uncup. This effectively reduces the storage capacity of the holder and on days of low gas consumption a layover period is required to delay filling of the holder until the end of the shift.

Clinkering Procedure—As a result of years of experience with the clinker formation from this coal, the machine is cleaned on a weekly cycle as follows:

Monday morning—Clinker removed from grates. Ash removed from ash pit. Clinker barred down from sidewall and left on grates.

Monday afternoon—Dust catcher emptied. Three-way valve cleaned.

Tuesday morning—Clinker removed from grate, but not touched on sidewall. Ash removed from ash pit. Carbon removed from base of carburetor. Scurfing air jets tested with steam and cleaned, if necessary.

Wednesday morning—Clinker removed from grate. Ash removed from ash pit. Sidewall clinker barred down and left on grate.

Thursday morning—Clinker removed from grate. Ash left in ash pit. Sidewall clinker left on wall.

Friday morning—Clinker removed from grate. Ash removed from ash pit. Sidewall clinker barred down and left on the grate.

Friday afternoon—Three-way valve cleaned.

Saturday morning—Clinker removed from grates. Ash removed from ash pit. Sidewall clinker barred down and left on grates.

Sunday morning—Clinker removed from grates. Ash left in ash pit. Sidewall clinker left on wall.

The fire is burned down on Tuesdays, Thursdays, Fridays, and Sundays to permit the barring down of wall clinker on the following mornings.

Hold-up bars are used during the removal of the clinker from the grate. The gas-maker and the fireman do all the work of clinkering and usually complete the actual cleaning of the generator and carburetor in less than one hour. Work begins at 7 o'clock in the morning and the machine is ready for gas-making before 8 o'clock. However, unless the main holder is close to the point of uncupping, operation is delayed. A fair allowance for clinkering and ash, carbon, and dust removal, and cleaning of the scurfing air jets and three-way valve would be from one hour to one and one-half hours per day.

The use of hold-up bars is not imperative. However, at this plant the operators have found that they can clean the grates more quickly by the use of hold-up bars than by the method of leaving a pier of clinker at the center of the grates to support the fuel bed, since the latter requires considerably more care in the handling of clinkering tools in order to keep the fire from breaking through. The fuel loss is thus minimized, and the need for reclaiming fuel is obviated.

Charging—After cleaning the fire, from

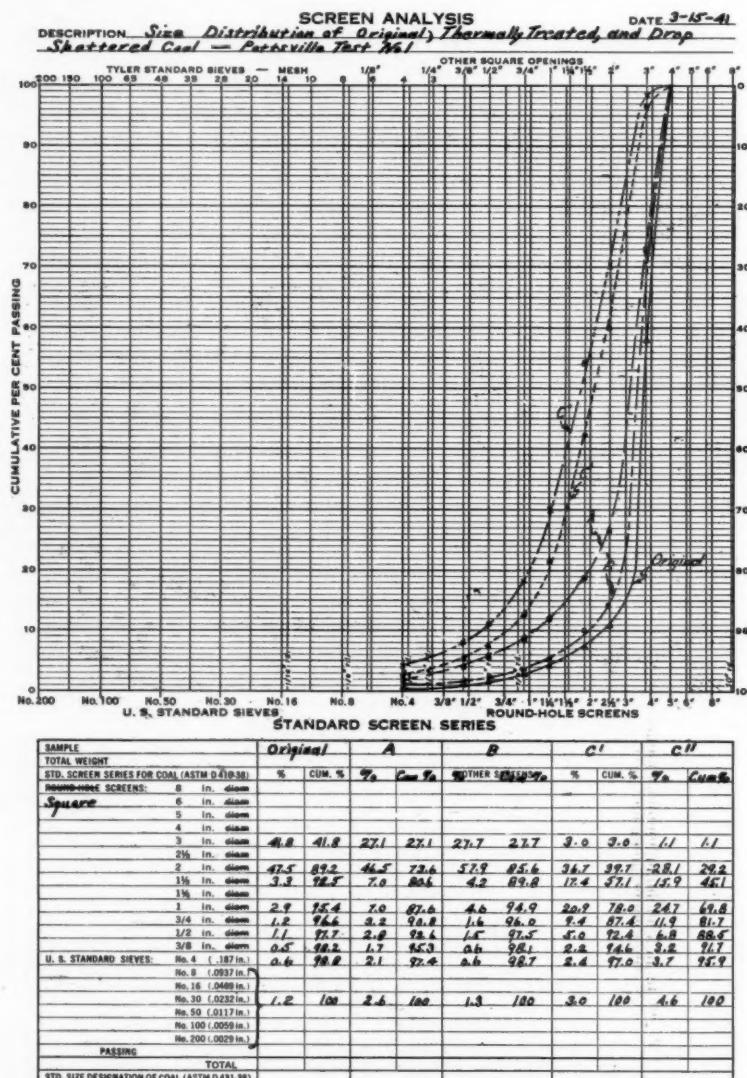


Figure 1—Size distribution of original, thermally treated and drop shattered anthracite. Pottsville Test No. 1; without reworking

four to five buggies of coal are charged to the generator. Eleven runs are made on the first charge. Thereafter, one buggy is charged approximately every ten runs. The approximate weight per charge is 725 pounds.

First Blow—The first blow period is long and may last from 15 to 20 minutes. The large mass of coal with its high heat capacity is slow in warming up, and usually about 6 or 7 minutes of blowing is required to light the carburetor. A hot rod is inserted through the sight cock in the top of the carburetor to ignite the generator blast gas. This is due to the low temperature of the gas leaving the generator, and to the cold carburetor resulting from the overnight standby of approximately 16 hours.

The blast volume is governed by the amount of air that the blower can deliver. The generator blast valve is opened wide, while the carburetor blast valve opening is adjusted according to the appearance of the blast gases at the stack. If any gas burns near the pilot light at the stack, the carburetor blast valve is opened an additional notch or more until the flame disappears. The scurving air valve is kept wide open whenever the carburetor blast valve is open because at this plant the amount of carbon deposited in the base of the carburetor is effectively reduced thereby.

First Run—The first blow is discontinued and the first run is put on when the temperature near the base of the superheater reaches approximately 1,400° F. No backrun is made during the first run and a reduced quantity of oil is used.

Regular Cycle—The regular cycle is used on the second and all subsequent runs with the exception of the last one when the backrun is omitted. The length of the blast is governed by the temperature, the blast period being continued until a predetermined temperature is reached on the pyrometer. This was 1,560° F. during the periods under observation, and was determined by the character of the wash box overflow.

The make period is constant in length and totals 3.5 minutes as follows: uprun 1.5 minutes, backrun 1.67 minutes, final uprun 0.25 minutes, and air purge 0.08 minutes.

Approximately 60 per cent of the oil required for enrichment is sprayed into the carburetor at the beginning of the uprun; immediately after the carburetor oil valve is closed the remaining 40 per cent of the enrichment oil is admitted to the top of the generator fuel bed. The uprun period is long enough to permit the admission of all the oil required for enrichment. From 10 to 12 gallons per run—measured hot at the oil meter—are used. The rate of admission is 10 gallons per minute to the carburetor and 5½ gallons per minute to the generator.

Reforming oil, when used, consists of 2 gallons—measured hot—admitted at the beginning of the backrun. Since the amount of reforming practiced at this plant is very small, no provisions are available for delaying the backrun steam as in most of the ignition arch installations.

The steam rates are determined to bal-

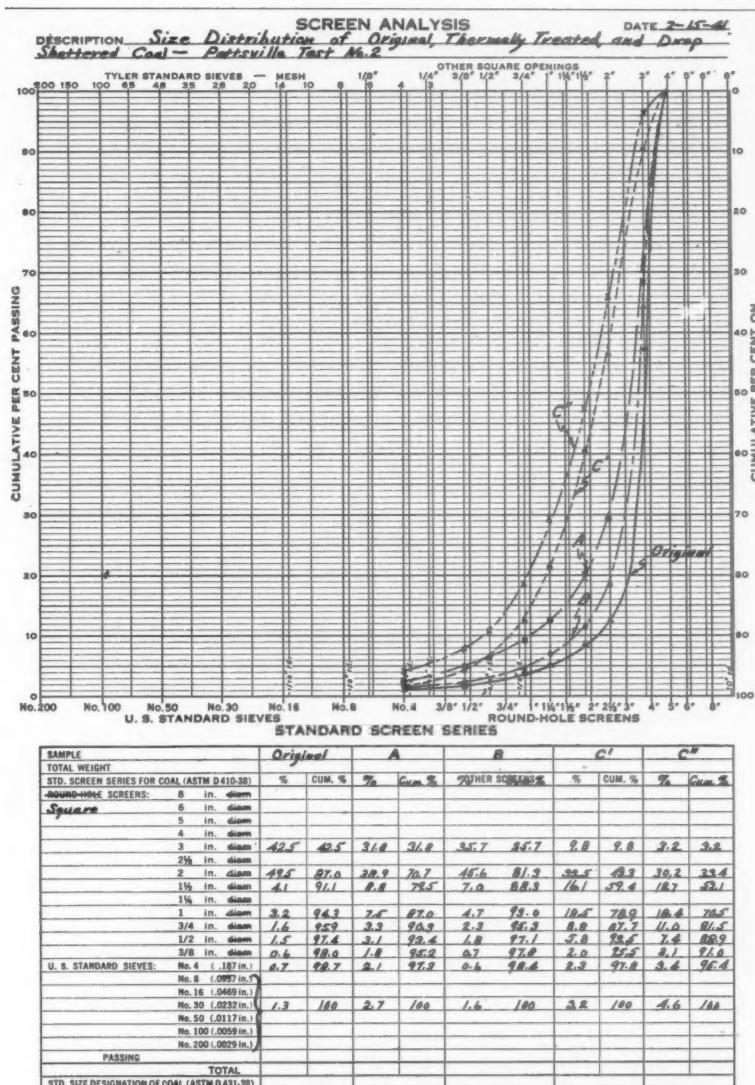


Figure 2—Size distribution of original, thermally treated and drop shattered anthracite. Pottsville Test No. 2; with reforming

ance the quality of the gas and the clinker conditions, and range from 24 to 31 lbs. per min. during the uprun and from 36 to 38 lbs. per min. during the backrun. The relation between the uprun and backrun steam used is a major factor in determining the position and condition of the sidewall clinker if the remaining operating conditions and the quality of the ash are unchanged.

Complete numerical data on the regular cycle are included in tabular form with the rest of the operating figures.

Materials Used

The coal used is 4 3/8" x 3 1/4" round hole screen size and is known to the trade as broken size. It is supplied from a nearby central breaker and varies in its characteristics only within the limits possible through

variations in the proportions of coal taken from the individual mines or seams served by the breaker.

The oil has an A.P.I. gravity (at 60° F.) of approximately 18°.

Chemical analyses of coal and oil are included in tabular form with the operating figures. Screen analyses of the coals as charged are shown in Figures 1 and 2, together with laboratory test data on size stability to thermal and mechanical shock. Thermal and mechanical stability were determined by the standard methods described in Bulletin No. 31, Mineral Industries Experiment Station, The Pennsylvania State College.

The data and curves marked A show the size distribution of the coals after the standard A.S.T.M. double drop shatter of the original coal; data and curves marked B

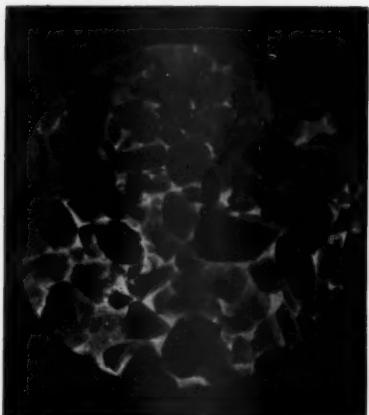


Figure 3—Anthracite fuel bed in water gas generator viewed from charging door immediately prior to introduction of fresh charge after 5½ hours of operation

show the size distribution of the coals after subjection to thermal shock only; data and curves marked C' and C" show, respectively, the size distribution of the coal after single and double drop shatter of the thermally treated coal.

General Behavior of the Coal

Operation at Pottsville is generally conducted with reforming of approximately 15 per cent of the oil consumed. For purposes of comparison, the plant operation was observed for one week under test conditions without reforming and for another week under normal operating conditions with the normal amount of reforming.

The depth of the fuel bed during each week of operation averaged approximately 6 feet. The coal charged without reforming averaged 724 pounds and with reforming 734.

The coal showed little evidence of decalcification due to thermal shock. The top of the fuel bed in both operations had a good red heat in the center and was yellowish near the circumference. Figure 3 shows a picture of a typical fuel bed taken just prior to charging after approximately 5½ hours of regular operation. In both operations the fuel bed appeared equally free for the passage of gases.

The ash content of the coal happened to be lower during the period of no reforming than during the one with reforming, but the clinker was dish-shaped, fairly close to the grate at the center of the generator, and easily removed during both operations. However, with reforming, the clinker and ashes were considerably darkened by a deposit of carbon.

When no reforming was employed, the sidewall clinker was about a foot above the clinker door, and light and easy to remove. With reforming, in spite of a higher percentage of ash, the sidewall clinker was closer to the top of the clinker door and less easy to remove. This can be explained; first, because a lower rate of uprun steam

SUMMARY OF OPERATING RESULTS

Dates of operation under observation	Start 7-22-40	8-5-40
Kind of operation	Finish 7-28-40	8-11-40
Coal used	Without	With
Source	Reforming	Reforming
Proximate Analysis (dry)	Anthracite	Anthracite
Fixed carbon—per cent	St. Nicholas	St. Nicholas
Volatile matter—per cent	Breaker	Breaker
Ash—per cent		
Moisture (ash charged)—per cent	89.53	84.34
Heating value per lb. (as charged)—B.t.u.	3.22	4.39
Fusion temperature of ash—deg. F.	7.25	11.27
Ultimate Analysis (dry)	13,385	12,870
Carbon—per cent	3.23	2.65
Hydrogen—per cent	13,385	12,870
Oxygen and nitrogen—per cent	2,800+	2,690
Sulphur—per cent		
Ash—per cent	7.25	11.27
Kind of oil used		Heavy Oil
Source		Sun Oil Company
Moisture—per cent	0.6	0.01
Gravity—A.P.I. at 60° F.—deg.	18.13	19.00
Pounds per gallon—lbs.	7.875	7.830
Heating value per lb. (as used)—B.t.u.	18,815	19,003
Carbon residue by weight	7.25	7.65
Carbon—per cent	86.41	87.23
Hydrogen—per cent	11.70	11.82
Sulphur—per cent	0.57	0.59
Temp. oil entering set—deg. F.	256	267
Total length—minutes		Average Cycle
Blow—minutes	6.09	6.59
Uprun—minutes	2.59	3.09
Backrun—minutes	1.50	1.50
Final uprun—minutes	1.67	1.67
Air purge—minutes	0.25	0.25
Carburetor blast on—minutes	0.08	0.08
Surging air on—minutes	2.51	3.01
Generator air—cu.ft. per min.	2.51	3.01
Uprun steam—lbs. per min.	1,890	1,780
Backrun steam	31	24
Total oil per run—gals.	38	36
Rate of Oil Admission	8.9	11.9
To carburetor—gals. per min.	10.3	10.3
To generator—gals. per min.	5.5	5.5
Enrichment oil to carburetor—gals.	5.4	6.0
Enrichment oil to generator—gals.	3.5	3.9
Reforming oil to generator—gals.	0	2.0
Temperature of base of superheater at end of blast (control pyrometer) °F.	1,560	1,560
Pressure at base of generator during blast—in. water	26	27
Average depth of fuel bed—in.	73	73
Average weight per charge of coal—lbs.	724	734
Analysis of Finished Gas		
CO ₂	3.49	3.16
H ₂	7.88	8.32
O ₂	0.47	0.64
CO	33.84	31.08
H ₂	42.97	45.31
CH ₄	6.61	7.39
C ₂ H ₆	0.99	0.93
N ₂	3.75	3.17
B.t.u. per cu.ft. (calorimeter)	528	522
Running time during period of observation—days	7	7
hours	46.72	46.80
Corrected gas made—M.C.F.	1,494.0	1,550.1
Gas made per running hr.—M.C.F.	32.0	33.1
Total runs	455	421
Gas made per run—cu.ft.	3,284	3,682
Total anthracite used—lbs.	48,385	41,977
Anthracite per M.C.F.—lbs.	32.39	27.08
Total oil used—gals.	4,051	5,045
Oil used per M.C.F.—gals.	2.71	3.25
Steam used per M.C.F.—lbs.	35.84	27.73
Generator air per M.C.F.—cu.ft.	1,491	1,494
Gas made per sq.ft. grate per running hour—cu.ft.	2,547	2,634
Cold gas efficiency—per cent	63.23	62.73
Terzian factor	1.15	1.14
H ₂ S before purification—gr./C.	116	135
Specific gravity (air = 1.00)	0.607	0.585
Naphthalene—gr./C.	20.07	21.50

was used with reforming; second, because there is no provision in this plant for delayed steam during the admission of backrun oil and there is, therefore, a very high rate of flow of steam and oil vapors through the fuel bed during the early portion of the backrun, driving the heat down and raising the temperature sufficiently to produce during the subsequent blast a combustion intense enough to fuse the ash into a hard clinker; third, less total coal was used in the operation; fourth, but of major importance, the softening temperature of the ash was lower.

Very little blown-over fuel was recovered in the dust catcher. However, this angle connection dust catcher is not of standard design, due to lack of space, and no significance can be attached to the small amount of blown-over fuel in it.

The "carbon" in the base of the carburetor seemed to be about the same in quality in both operations, although a total of 197 pounds were removed during the week when there was no reforming, while only 135 pounds were taken out during an equal period of reforming operation. Too many factors enter into the production of this "carbon" to explain this difference in weight. Among these factors may be included: amount of blown-over fuel deposited in the base of the carburetor, amount of oil sprayed into carburetor, carbon residue in oil, condition of the oil sprays, condition of the carburetor lining, condition of the scurfing air jets, amount of excess carburetor air supplied during the blast, amount of loose ash blown from generator into carburetor, and amount of carbon remaining in the generator from the enrichment oil sprayed on top of the fuel bed.

The three-way valve required less cleaning during the operating period without reforming than during the one with reforming.

Discussion

The foregoing text and tables describe the results obtained, with approximately 15 per cent reforming and without any reforming of heavy oil, in a water-gas plant typical of its size and capacity when using one particular anthracite.

The results shown for the seven days of observation of the normal operation with reforming hold very close to the results regularly obtained in this plant and are, in no sense of the word, figures obtained under conditions where special pains were taken to obtain low coal and oil results. The observers took no part in the operation of the plant; they merely recorded the operating data.

It is to be noted, in view of the threatened shortage of oil, that although the generator coal without reforming showed an increase of 19.6 per cent over the coal used with reforming, this increase is compensated for by a reduction in oil consumption of 16.6 per cent. Since the calorific value of the gas was 528 B.t.u. per cu.ft. without reforming and 522 B.t.u. with reforming, the amount of oil might have been reduced still further in the operation without re-

forming. The Terzian factors and cold gas efficiencies were practically the same in both operations.

The matter of size stability is of interest to all users of solid generator fuel, and especially so to those contemplating a change to new fuel. Laboratory determinations were made of the size stability toward both thermal and mechanical shock for the coals used, and the results checked by frequent observations of fuel bed condition and overall pressure drop through the fuel bed. The coals showed excellent resistance to decrepitation and their behavior in the generator agreed closely with predictions based upon laboratory tests. As may be seen from a study of Figure 3, little decrepitation of the coal can be observed in the fuel bed.

Other anthracites with appreciably lower resistance to thermal shock, as evidenced by size stability tests and by observation in actual use at Pottsville and elsewhere, have yielded equally good capacity and operating economy. Thus, it may be safely concluded that within the limits of pressure under the grates which the blower is capable of producing in plants similarly equipped to that at Pottsville, the decrepitation of the coal is a negligible factor in ease or economy of operation. In plants having blowers capable of building up much higher pressures, however, more care is required in the selection of coal to insure the best performance.

Acknowledgment

The authors wish to express their appreciation and thanks to Stone and Webster Corporation and the Pottsville Gas Company for permission to conduct the tests; to the management and operating personnel of the plant for their whole-hearted cooperation; and to Messrs R. J. Grace, G. S. Kratzer, and C. Nuebling for very material assistance with the analytical work reported.

UNACCOUNTED FOR!

(Continued from page 25)

of consideration. For example, in many instances a suspicion of gas tampering will also develop a case of electric tampering. Also, reports initiated by the employees of the meter reading and billing groups are checked with a carefully indexed file maintained by the Meter Irregularities Group. This operation will reveal an increase in gas or electric diversion cases in a particular area of the system and thereby provide the information necessary for a concerted drive by the Meter Irregularities Group to counter an increase of theft cases.

Conclusion

The writer desires to submit the following facts and conclusions in summarized form for the consideration of interested readers.

- (a) Gas meters and lines are vulnerable to gas theft by the amateur as well as the skilled individual, and information regarding methods by which tampering can be successfully practiced spreads rapidly.

(b) The opportunity to enjoy the unrestricted use of gas as a fuel for house heating, cooking, water heating, etc., at a total elimination of fuel costs, provides an attractive monetary incentive to persons susceptible to theft.

(c) The element of personal fear which in the past may have acted somewhat as a deterrent to the spread of gas theft is definitely on the wane.

(d) That the most effective discouragement to the development and spread of tampering cases is the employee who has been trained in the detection of tampering methods.

(e) It has been definitely established that the curtailment of tampering practices, if properly administered, can be accomplished with a large savings to any utility company.

1941 HIGHLIGHTS

(Continued from page 6)

and 67,000 units use gas for space-heating.

Some 700 operating gas companies continued for the sixth consecutive year to sponsor a national advertising program supplemented by local newspaper advertising. Advertisements on the modern gas range and on the four main household uses of gas fuel appeared in national consumer magazines. Sixteen magazines serving the trade and professional fields have carried advertising promoting the commercial and industrial use of gas. For the first nine months of the year, strong appliance-selling campaigns utilizing newspaper advertising were conducted by local companies.

Home economics departments of gas companies report that war developments have greatly accelerated the housewife's interest in nutrition and vitamin-saving cookery. Standing room only at cooking demonstrations is not uncommon. The trend is definitely toward stretching the food dollar to compensate for increased costs.

"Man's Profession"

I hold every man a debtor to his profession; from the which as men, of course, do seek to receive countenance and profit, so ought they of duty to endeavor themselves by way of amends to be a help and ornament thereunto.

—Francis Bacon (1561-1626)

Billions for Defense

The General Accounting Office in Washington is spending \$10,000 to have its machines rebuilt so they can register in billions.—Herbert Corey in *Nation's Business*.



Laboratories

GEORGE E. WHITWELL, Chairman

R. M. CONNER, Director

W. H. VOGAN, Supervisor, Pacific Coast Branch

Our Laboratories' Contribution to War Efforts



R. M. Conner

ONE of the immediate results of our national emergency has been unparalleled expansion of the number and scope of governmental bureaus concerned with production and supply of commodities for defense and civilian needs. Vast quantities of products of all descriptions have

had to be quickly supplied for our greatly expanded army and enlarged federal housing projects as well as increased civilian demands. To meet these needs it has become more and more essential that many commodities, particularly those affecting safety of the user, be tested and approved products. While in recent years popular demand for certification of consumer goods has greatly increased, the unprecedented requirements now facing the nation have given new impetus and greater urgency to availability of equipment that would perform the service for which it was intended in a safe, economical and convenient manner.

Enormous demands for approved gas-

By R. M. CONNER

Director,

A. G. A. Testing Laboratories

burning equipment in army camps, defense housing and similar projects, have brought about increasing participation of the American Gas Association Testing Laboratories in the present emergency. The difficulties which would have been encountered without existence of a wide range of tested and approved gas appliances, from which suitable selection could be made to meet individual circumstances, can well be imagined. Fortunately, the past operations of the Laboratories made such products available on demand. In this way the services of the Laboratories, which for many years have had as their major objective the protection of the gas-consuming public, have been extended to that of our national government and its numerous branches as well. Practically every agency, such as the War Department, Veterans Administration and the United States Housing Administration, to mention only a few, now require approved gas equipment for installation in projects under their supervision.

Immediate heating needs of our newly constructed army camps and housing proj-

ects around newly developed defense industries as well as an unusual amount of civilian construction to meet a 2,000,000 unit housing shortage have, in a large majority of cases, been met by a wide range of previously tested and approved equipment. However, in certain instances, special needs arose. It is of interest to note that demands for equipment to fit special needs were more a problem of size and adaptation rather than development of new designs. As approved models were universally demanded, the Laboratories were called on for prompt test and approval service so that manufacture and delivery could proceed without delay.

Emergency Trends

Conventional approved gas cooking and water heating equipment have adequately fulfilled the needs of federal housing projects and relatively minor changes were required for these kinds of appliances. Certain trends, however, have been discernible as a result of the emergency and resulting market. For example, a larger percentage of apartment size ranges have recently been submitted to the Laboratories for certification. These are intended for installation in small homes and apartment suites designed for national defense workers. As floor space is at a premium, these models are preferable to the spacious conventional domestic gas range. For the same reasons, there has also been a large demand for ranges designed for flush-to-the-wall installation and approved for use under such conditions.

Similarly, no notable changes have been indicated in water heating production. Greater emphasis, however, has been placed on automatic storage types for all water heating purposes. As a result of the national emergency, automatic storage heaters of both larger and smaller capacities than were previously generally available have been required. Large capacity automatic storage and booster gas water heaters have been tested and approved for installation in army kitchens, primarily for dish washing uses. They may be contrasted with models 9 to 15 gallon capacity which are required for installation in officer's quarters and offices as well as for small homes and individual apartments.

As evidenced by the number of models submitted to the Testing Laboratories, greatest changes to meet the demands of the current emergency have taken place in the central heating gas appliance field. Greatly expanded needs for heating equip-



Laboratories' inspector visits modern department store to check construction of appliance with models originally approved

ment in army camps and housing projects necessitated development and certification of many units especially designed for their specific requirements. To this may be added the widespread civilian building activity to meet a housing shortage aggravated by increased industrial activities in urban centers. When it is considered that more than 60% of the new homes constructed in the past year employed gas for house heating, its importance is readily evident. Considering the range of anticipated heating requirements which vary widely over the entire country, it may readily be seen that all types of gas-fired house heating equipment were affected.

While recent years have witnessed development of package type furnaces, the trend in this direction has been greatly accelerated, with higher gas consumption per cubic foot of combustion space than heretofore employed. Moreover, these units have been designed in a large variety of shapes to fit space requirements. In this respect the Laboratories have approved many highboy units designed for installation in small utility closets and other confined spaces. These have become very popular for use in individual apartment suites of defense housing projects. For those homes where floor space problems are acute, special units are now available having low rectangular shaped casings which may be suspended from the ceiling of a basement, or others which may be installed in attics. Another development under these conditions has been an increasing tendency to gravity furnaces equipped with booster fans.

Government Recognition Received

Importance attached by various government agencies to American Standards applied by the Laboratories and the value of compliance with them is well illustrated by the following examples. The Commercial Standard for Gas Floor Furnaces, recently prepared under the auspices of the Division of Trade Practice of the National Bureau of Standards, specifies as a prerequisite compliance with latest American Standard Approval Requirements for Central Heating Gas Appliances. Proposed Specification for Gas-Fired Air Conditioning Furnace with Pressure Type Blower and Controls, now being prepared by the Emergency Committee, National Warm Air Furnace Manufacturers under the Federal Works Agency, contains like provisions. In this way models bearing the Laboratories Approval Seal as evidence of their approval receive full recognition.

A comparison of appliances and accessories manufactured today with those produced the early part of last year would soon reveal the principal changes which have taken place as a result of the national emergency. Perhaps most obvious would be the almost complete elimination of decorative trim which previously enhanced the streamlined appearance of modern contemporary equipment, as a direct result of co-



Thermal efficiency test of modern forced-air type furnace

operation of our industry in voluntarily diverting such materials as chromium and nickel to more essential purposes. Closer scrutiny of appliances on the market will also reveal a trend from the use of aluminum and copper tubing to that of steel. In place of copper and other corrosion-resisting type water heaters, tanks with special linings may be encountered.

As further restrictions and allocations of materials are made, other changes may be expected. As a result of a recent request made by the Office of Price Administration and Division of Civilian Supply, Office of Production Management, that domestic gas ranges be constructed without top burner covers after December 15, 1941, we may well expect to find this feature eliminated on future models. It is estimated that this restriction will make approximately 2,500 additional tons of steel available for more essential purposes. There is no doubt, under present international circumstances, that the number of all gas appliances produced will be curtailed to bare essential needs.

Special attention should be directed to an additional development of the National Defense Program of an entirely different nature from anything with which our Laboratories have previously been engaged. Copper and copper alloys are a vital part in the fabrication of a wide range of products for military and naval purposes. In recognition of this fact the Office of Production Management issued some time ago Copper Conservation Order M-9-c which drastically restricted the use of copper and its alloys for civilian usage. As originally written, this order would virtually prohibit the use of copper or brass in the construction of gas appliances. Such a step possessed far-reaching implications to the

gas industry, manufacturers and distributors alike, to say nothing of the consuming public. Fortunately, an amendment to the original order modified its former provisions insofar as they related to valves, up to 2 inches in size, and thermostats. Many articles widely used on gas appliances in which copper and brass are employed still remain, the status of which is not entirely clear at the present writing. Fortunately, however, the order contains a provision which it is felt may eventually make possible a further lifting of the present limitations on the use of copper.

The following is quoted from Copper Conservation Order M-9-c amended as of November 5, 1941, appearing as part of paragraph 2 under Item (b), General Reception, which states previously described restrictions shall not apply to use of copper in articles being produced:

"for use to comply with Underwriters Regulations, or Safety Regulations issued under Governmental authority, provided the pertinent provisions of such Regulations were, in either case, in effect both on October 1, 1941, and on the date of such use,"

The effect of this exception would be to remove restriction on the use of copper and its alloys to the extent necessary to secure compliance with nationally accepted regulations. For the past 16 years our industry, through its Laboratories, has sponsored the development of requirements covering gas-burning appliances and their accessories. Since 1930 such standards, as prepared by customary committee procedure, have been adopted by the American Standards Association and become American Standards. Our Approval Requirements Committee which is also a sectional

committee of the American Standards Association which exercises supervision over preparation and revision of these requirements includes in its membership representatives of many governmental and general interest groups. Furthermore, government agencies are liberally represented on various other committees of the American Standards Association. Representatives of such agencies are also members of its Board of Directors and, therefore, take an active part in its management. In view of the comprehensive and representative nature of the American Standards Association and the extensive part which the national government takes in its operations, it is felt that standards approved by it should be regarded as having the endorsement of our government. Therefore, they should be entitled to at least the same considerations as those extended to the requirements of Underwriters' Laboratories and similar groups.

Appliance Standards and Priorities

Extensive contacts have already been made by our Laboratories with officials of the Priorities Division of the Office of Production Management and full information presented on the significance of the standards applied in the testing and certification of gas-burning equipment and their accessories. It has been explained that in order to meet their extensive provisions, a very large percentage of which deal with safety, that the use of copper and copper-carrying parts is an absolute necessity. Lack of substitutes which may be employed in place of copper has been demonstrated and the necessity pointed out of obtaining a supply of copper in order that the large portion of our population dependent on gas fuel may continue to use it with safety.

Copper is of special importance in the case of accessories such as burner valves, safety pilots, thermostats, main control valves, pressure and temperature relief valves and similar accessories widely used on gas appliances. The amount of copper required in the fabrication of accessories used by the gas industry represents, of course, a very significant percentage of the country's total requirements. On the other hand without the use of copper and its alloys for essential operating parts of such accessories almost insurmountable difficulties would be obtained in the fabrication of equipment which would meet provisions of applicable American Standards. It can thus be readily realized that 80,000,000 customers of the industry, to say nothing of our country's armed forces, would be deprived of equipment capable of meeting basic safety features. Resultant conditions due to gas leakage, fire hazard, and explosion can well be pictured. All of these facts have been presented to officials of the Office of Production Management and a most sympathetic attitude displayed by them. It is hoped that recognition may be afforded to the American Standards applied by our Laboratories and restrictions thus lifted on copper which compliance with their provisions demands. This would

greatly assist manufacturer members of our industry who are vitally dependent on the use of copper and its alloys in the fabrication of many essential parts. Of far greater importance, however, is the assurance which will be given of providing our customers with appliances found by test to comply with safety features as demanded by the American Standards applied. Any contributions which the Laboratories have made or can make in accomplishing it is of major significance.

It will be evident from the foregoing that a large part of the operations of the Laboratories during the past year have been directly or indirectly concerned with special equipment and changes resulting from the national emergency. Moreover, all indications point toward even greater concentration of activities in this direction. In this respect the Laboratories, which are the largest agency of their kind in the world, are well equipped to handle the increased volume of work which may be required. Confronted with the need of employing substitutes in place of materials normally employed in construction of gas appliances and their accessories, it has been the unanimous desire of the gas industry and main concern of the Testing Laboratories that in all cases safety regulations of existing American Standards be fully met. In order that this might be accomplished, a large number of re-examinations were necessitated on previously approved equipment in which modifications in construction and material substitution were made.

Expansion of the Laboratories' field inspections for the purpose of insuring that the quality of approved equipment was maintained at the required high standard has been a further natural development of the current year. Consequently, inspections in manufacturers' plants as well as in distributors' warehouses and sales floors have been materially increased. In addition, a larger number of inspections have been made in consumers' homes for the purpose of checking these appliances as well as their installation and operation in service. The satisfactory conditions generally encountered reflect great credit on the manufacturers of appliances who, despite the obstacles brought about by the emergency, have cooperated in maintaining the high quality of their products.

Obviously, it is impossible at this time to foretell what is in store for the coming year. Existing material shortages which may be further intensified will undoubtedly result in concentration by manufacturers on a reduced number of models in place of the wide variety previously supplied. On the basis of past performance, there is every assurance that the needs of the consuming public and our government for fuel gas will be fully met by the gas industry. In all problems which may arise, the Laboratories will stand ready to lend assistance to the end that the high level of safety and efficient operation of contemporary gas-burning equipment will be continued throughout this emergency.

Pacific Coast Advertising Continues in 1942

J. SPAULDING, chairman of the Co-operative Advertising Committee of The Pacific Coast Gas Association, reports that plans and financing have been completed for 1942 Pacific Coast gas advertising. This industry promotion has been continuous since its inception in 1929, and 1942 will be its 14th year.

The 1942 budget totals \$41,050. Subscribing companies for 1942 are Coast Counties Gas and Electric Co., Pacific Gas and Electric Company, San Diego Gas and Electric Co., Southern California Gas Co., and Southern Counties Gas Co. The Gerth-Knollin Advertising Agency will continue its excellent work in handling the details.

Bureau of Mines Reports on Coal Research

THE annual report of research and technologic work on coal for the fiscal year 1941 (Bureau of Mines Information Circular 7190) by Arno C. Fieldner, chief, technologic branch and chief engineer, Coal Division, Bureau of Mines, Washington, D. C., and L. D. Schmidt, chemist, Coal Division, Bureau of Mines, Pittsburgh, Pa., has just been released to the gas industry. It is the sixth in a series of annual reports designed to increase the fund of knowledge on the properties and composition of American coals and to foster better methods in mining, preparing, storing and utilizing coal.

Advertising is an economical substitute for a personal sales talk to a consumer.

—Richard Compton

Personnel Service

SERVICES OFFERED

General Superintendent with many years successful operating experience, on combination gas and electric properties, is desirous of making a change. Complete information as to qualifications and references on request. 1432.

Salesman—interested in lucrative proposition. Twenty-five years stove and heating experience, contacting utilities, wholesale, retail and consumer trade. Capable sales promoter and department manager. Have covered eastern and southern areas. 1433.

House Heating Expert—young married man thoroughly experienced in sales, engineering, and installations of gas heating and air conditioning systems, desires position—preferably with utility company. Has had 11 years' experience with the largest manufacturer of gas heating and air conditioning equipment and 3 years with utility company (37). 1434.

As **Salesmanager** salesman, purchasing agent, or factory representative. Twenty-three years' experience in practically every branch of the companies in greater New York. 1435.

Industrial Engineer, E. E. and M. E. Thirteen years in domestic, commercial and industrial sales, service, and utilization experience with a company having outstanding success in the sale of natural gas. Available now, married (38). 1436.

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